



Federal
Financial
Management
System
Requirements

Framework for Federal Financial Management Systems

FFMSR-0
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Foreword

The federal government recognizes the importance of having high quality financial management systems to support improvement of government operations and provide financial and related information to program and financial managers. In 1990, Congress passed the Chief Financial Officers Act, placing specific responsibilities for developing and maintaining integrated financial management systems with the Chief Financial Officers of federal agencies covered by the Act. Since the Act was passed, the Office of Management and Budget, the Department of the Treasury, the General Accounting Office, and individual agencies have been working collectively to improve financial management systems throughout the federal government.

One critical prerequisite to improving federal financial management systems is understanding what is meant by integrated financial management systems for the federal government. In 1988, the Joint Financial Management Improvement Program began the process of defining the financial management system requirements by publishing the *Core Financial System Requirements*. Since then, additional documents have been issued to create a series of financial management system requirement documents called the Federal Financial Management System Requirements (FFMSR). These documents, however, do not describe completely how the various financial management systems covered in the specific requirement documents fit together and how these systems should be integrated to meet the needs of program and financial managers of the government. Therefore, this document, *Framework for Federal Financial Management Systems*, was developed to address these issues.

The *Framework* document is intended for use by senior systems analysts, systems accountants, and their immediate supervisors as a reference tool. It describes the basic elements of a model for integrated financial management systems in the federal government, how these elements should relate to each other, and specific considerations in developing and implementing integrated financial management systems.

The *Framework* document should be used in conjunction with both current and future FFMSR documents. JFMIP intends the FFMSR series to promote understanding of key financial management systems concepts and requirements, to provide a framework for establishing integrated financial management systems to support the partnership of program and financial managers, and to describe specific requirements of individual types of financial management systems.

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BPR -----	Business Process Reengineering
CASE -----	Computer-Aided Software Engineering
CFO -----	Chief Financial Officer

Acronyms

COSO	-----	Committee of Sponsoring Organizations of the Treadway Commission
EIS	-----	Executive Information System
FASAB	-----	Federal Accounting Standards Advisory Board
FMFIA	-----	Federal Managers' Financial Integrity Act
FTE	-----	Full Time Equivalent
GAO	-----	U.S. General Accounting Office
GSA	-----	General Services Administration
IRM	-----	Information Resource Management
JFMIP	-----	Joint Financial Management Improvement Program
NARA	-----	National Archives and Records Administration
NIST	-----	National Institute of Standards and Technology
OMB	-----	Office of Management and Budget
OPM	-----	Office of Personnel Management
RFC	-----	Regional Finance Center (Treasury)
SFFAS	-----	Statement of Federal Financial Accounting Standards
SGL	-----	U.S. Government Standard General Ledger

Illustrations

Acronyms

I. Introduction

The United States Government is the world's largest and most complex enterprise. Effectively managing an enterprise of this size requires good information. The Report of the National Performance Review issued in 1993 said, ***“Management isn’t about guessing, it’s about knowing. Those in positions of responsibility must have the information they need to make good decisions. Good managers have the right information at their fingertips. Poor managers don’t.”*** It goes on to say, ***“Good information comes from good information systems. ... New management information systems are transforming government, just as they have business, in two ways. They can make government more productive ... and let us deliver services to customers in new ways.”***

Financial management systems are critical tools in the overall effort to reform government. If government employees are to be empowered to make and implement decisions rapidly and to be held accountable for results, they must have accurate and timely information, including financial information. Good financial management information must be available at all levels within the government, from the workers in field offices dealing face-to-face with customers up to managers and oversight officials at agency headquarters, the Department of the Treasury, the Office of Management and Budget (OMB), and the Congress. Financial management systems must enable program managers to operate programs efficiently, effectively, and economically; allow financial managers to report accurately to the Congress, program managers, senior management, and the public on a timely basis; and support efforts to deter fraud, waste, and mismanagement of federal resources.

Background

The federal government continues to improve its financial management and financial management systems. In the spring of 1994, the Chief Financial Officers Council (CFO Council) adopted the following vision for financial management:

“Enabling government to work better and cost less requires program and financial managers, working in partnership using modern management techniques and integrated financial management systems, to ensure the integrity of information, make decisions, and measure performance to achieve desirable outcomes and real cost effectiveness.”

Increasingly, integrated financial management systems are expected to support program managers, financial managers, and budget analysts at the same time. Information supplied by these systems is expected to become more timely, accurate, and consistent across government. Systems and data are being shared more and more by agencies with common needs.

In 1982 Congress enacted the Federal Managers' Financial Integrity Act (FMFIA). This act requires agency heads to establish controls that provide reasonable assurances that (i) obligations and costs comply with applicable law; (ii) funds, property, and other assets are safeguarded against waste, loss,

unauthorized use, or misappropriation; and (iii) revenues and expenditures are properly recorded and accounted for.

The Chief Financial Officers Act of 1990 (CFO Act) strengthened the government's efforts by assigning clearer financial management responsibilities to senior officials and by requiring new financial organizations, enhanced financial systems, audited financial statements, and improved planning.

The Federal Accounting Standards Advisory Board (FASAB) was established in October 1990 by the Secretary of the Treasury, the Director of the Office of Management and Budget, and the Comptroller General to recommend federal accounting principles and standards. After the Board's sponsors decide to adopt recommendations, the standard is published by the U.S. General Accounting Office (GAO) and the Office of Management and Budget and then becomes effective. The Statements of Federal Financial Accounting Standards (SFFAS) are published by OMB as the official standards for the executive branch. OMB revises and reissues its bulletins on the "Form and Content of Financial Statements" to be consistent with the standards. Pending issuance of basic accounting standards, the hierarchy contained in OMB's "Form and Content" Bulletin shall constitute an "other comprehensive basis of accounting" and shall be used for preparing federal financial statements.

OMB Circular A-127, "Financial Management Systems," initially issued in 1984, was revised in 1993. This Circular sets forth general policies for federal financial management systems and relates these policies to those in OMB Circular A-130, "Management of Federal Information Resources," and OMB Circular A-123, "Internal Control Systems" (currently under revision).

Over the years, other initiatives have been undertaken to improve financial management systems, such as establishment of the U.S. Government Standard General Ledger and publication of financial management systems requirements documents by the Joint Financial Management Improvement Program (JFMIP).

The Need for Good Financial Management Information and Supporting Systems

The financial resources and assets of the federal government are entrusted by the citizens of the country to the legislative and executive branches of the federal government for their stewardship. Stewardship means that financial and program managers are accountable for program results and fiscally responsible for the resources entrusted to them. Program managers must understand that their daily actions have financial implications for taxpayers and affect the amount of public debt that must be assumed by the federal government to support government initiatives. Further, program managers must be able to provide information that is essential to monitor budgets, operations, and program performance.

To meet these needs, financial management systems must process, track, and provide accurate, timely, internally consistent, and readily accessible information on financial activity in the most cost effective and efficient manner. These systems should not only support the basic accounting functions for accurately recording and reporting financial transactions but must also be the vehicle for integrated budget, financial, and performance information that managers use to make decisions on their programs. Further, these systems must support the President, the Congress, and individual program managers in understanding the implications of their decisions, tracking performance on programs and government initiatives, and facilitating modifications to policies when policies are not working as intended. Without meaningful financial information and supporting systems, neither the President, the Congress, nor the program managers can effectively carry out their stewardship responsibilities. Without good financial management systems, the Chief Financial Officers of agencies cannot carry out their financial management responsibilities or achieve the objectives of the government's financial management vision.

Purpose and Contents of this Document

The purpose of this document is to define the framework for establishing and maintaining financial management systems to support management and deliver programs of the federal government. This framework is needed to facilitate the design, implementation, and operations of financial management systems to support the increased emphasis being placed on improving government operations and providing meaningful information to multiple levels of users.

This document is designed to meet the needs of senior systems analysts, systems accountants, and their immediate superiors. It describes what constitutes an integrated financial management system supporting both budget and accounting needs and provides a framework for establishing such systems to support the partnership of program and financial managers. Further, it is intended to promote understanding of key financial management systems concepts to assist senior systems analysts and systems accountants in conveying these concepts to others. Accordingly, readers should use this document primarily as a reference tool, rather than a standard-setting document.

Specifically, the document describes what is meant by a single, integrated financial management system at a federal agency and how financial management systems throughout the government can work together to support consistent, accurate information flows to all interested information users. It demonstrates how financial management systems support the management and operations of the federal government. Further, it summarizes the relationships between the other documents in the *Federal Financial Management System Requirements* series published by JFMIP.

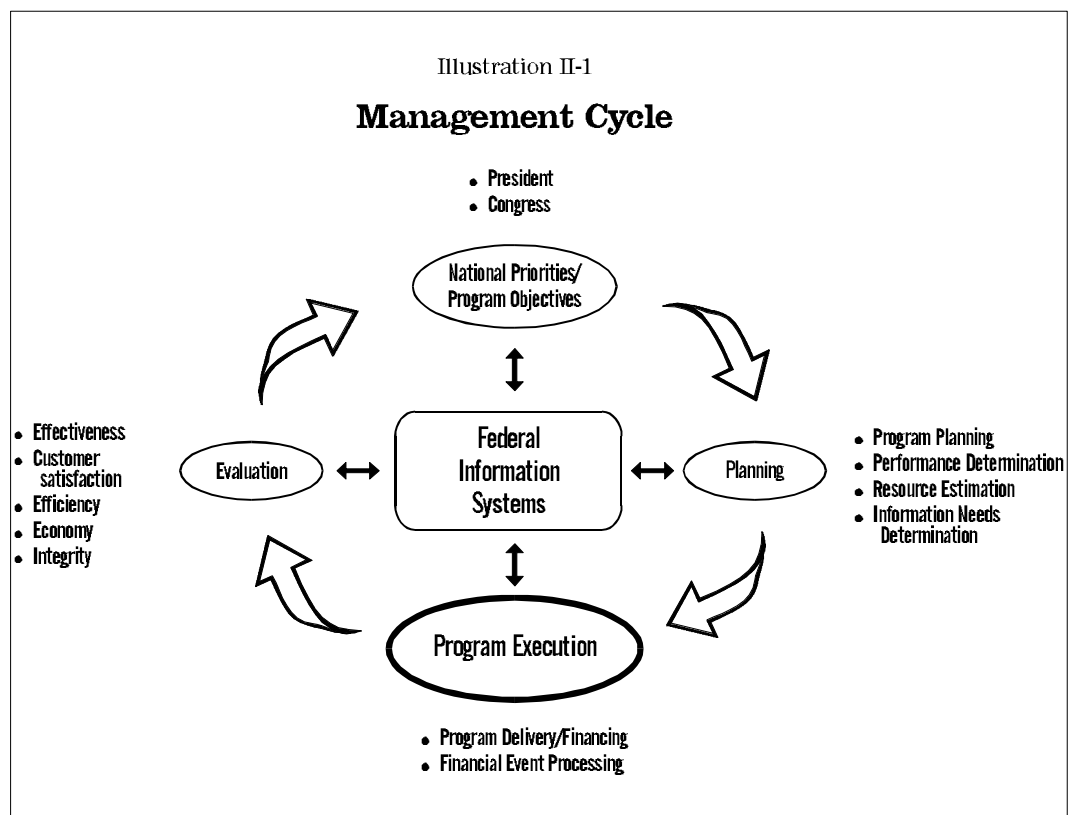
The content of the document is as follows. Chapter II sets the context within which financial management systems must operate. It describes how systems support the government's management cycle, presents the vision for financial management systems, briefly describes financial management systems policy, and introduces the elements of the framework for integrated financial management systems. Chapters III through VII discuss the processing, data stewardship, management information, systems architecture, and internal control elements of an integrated model for financial management systems used to support program execution. Chapter VIII discusses implementation of the integrated model for financial management systems and presents considerations affecting the planning, design, implementation, operation, and maintenance of financial management systems. A Glossary provides definitions of key terms used in the document.

II. Context for Federal Financial Management Systems

The financial management vision established by the CFO Council calls for program and financial managers to work in partnership, using integrated financial management systems, to supply budget (formulation and execution), financial accounting, cash, and cost information to support program management. Although the reporting needs are somewhat different for each of these areas, they can be met by an integrated financial management system that develops required information from transaction level data obtained from a single source when the financial event occurs. This chapter describes the framework for establishing integrated financial management systems necessary for the program and financial managers' partnership to succeed in improving program management and service delivery.

Supporting the Management Cycle

The management cycle is the process by which the federal government chooses, implements, and monitors the activities that are carried out to meet the goals and objectives of its citizenry. An effective management cycle, which is critical for good management, requires a natural flow of information from the establishment of national priorities and program objectives to program execution. It also requires the integration of planning, execution, and evaluation processes to ensure desired outcomes are achieved. Illustration II-1 provides an overview of the management cycle.



Federal information systems, including financial management systems, both manual and automated, are used to support each phase of the management cycle. For maximum effectiveness and efficiency, these systems must share and ensure the integrity of information needed to support the development and execution of programs and to predict and capture the financial consequences of program activities. Growing demands for more government services at lower costs and the need to improve quality will require that the government increase its dependence on automated information systems.

Clear national priorities and program objectives, established by the President and the Congress, are required to drive the federal government management cycle. Priorities are translated into resource allocations through the budget formulation process. Programs to implement priorities are established, abolished, increased, or reduced as priorities and approaches shift. Without the availability of reliable information, the government is unable to determine how well program objectives are being met or even how resources allocated are actually used. Good management decisions cannot be made without adequate feedback on the results of prior years' decisions.

The planning phase involves developing the strategies and plans, including technical approaches and schedules, to carry out program objectives; establishing program performance measures and targets in accordance with Congressional and OMB guidance; estimating resources required; and determining information collection and dissemination needs. The successful completion of these planning tasks will guide program execution activities.

The program execution phase involves linking the program delivery activities and financing strategies with the tracking and reporting of the financial consequences of program activity (financial event processing). Program execution includes the processes necessary to carry out program objectives and provide information to monitor and manage program execution activities. Inherent in program execution is designing processes with appropriate management control (the organization, policies, and procedures used) to reasonably ensure that (i) programs achieve their intended results; (ii) resources are used consistent with agency mission; (iii) programs and resources are protected from waste, fraud, and mismanagement; (iv) laws and regulations are followed; and (v) reliable data are obtained, maintained, reported, and used for decision making. This document focuses on the financial management system support for the program execution phase of the management cycle.

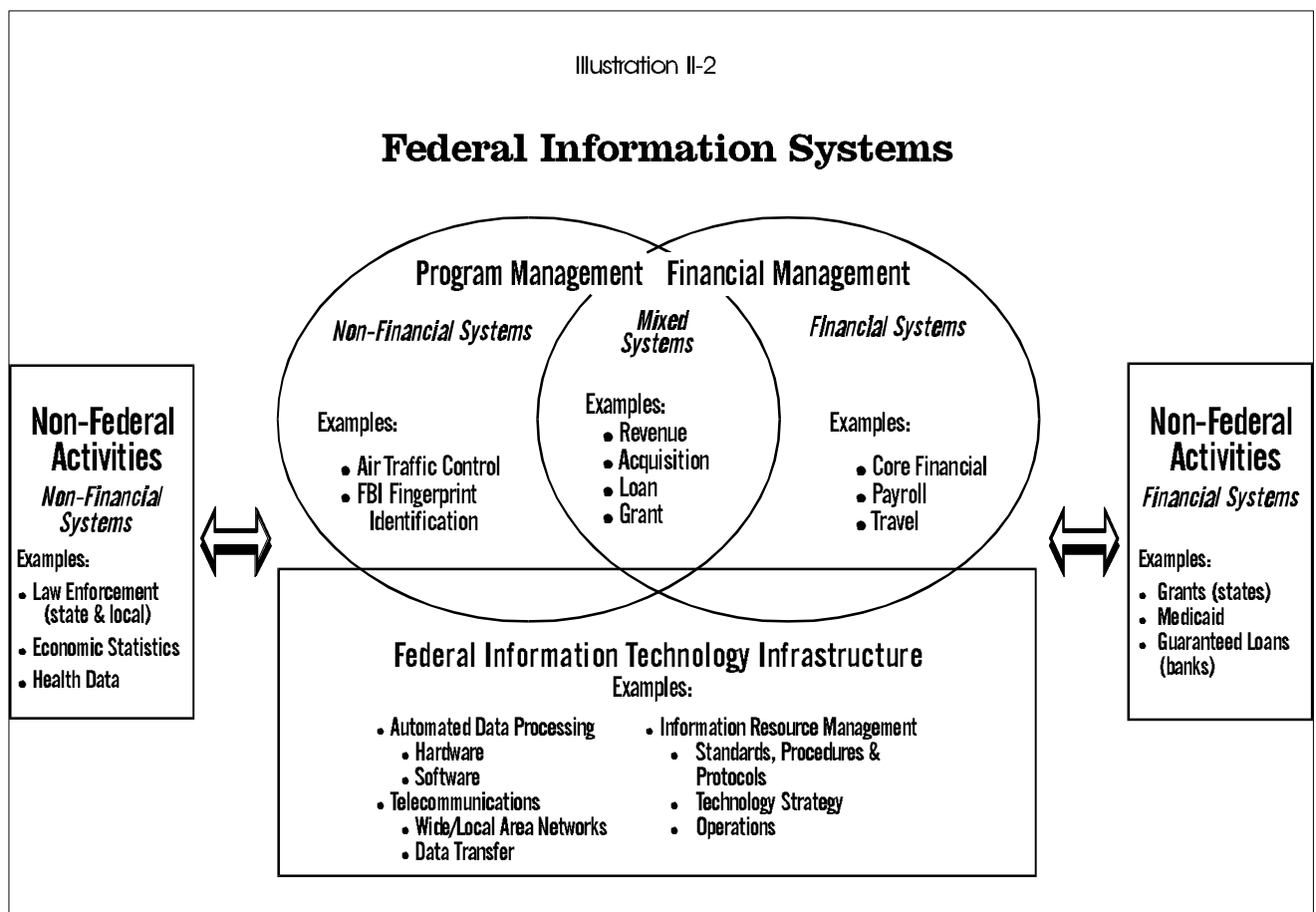
Lastly, program execution must be evaluated on a continuing basis. The evaluation phase analyzes (i) the effectiveness of programs in meeting program objectives and performance targets, (ii) the satisfaction of the "customers" of the programs, (iii) the efficiency of program execution through minimizing the use of resources, (iv) the accomplishment of objectives at a cost commensurate with the benefits and risk, and (v) the integrity of the program throughout all aspects of the management cycle with regard to avoiding fraud and abuse. The evaluation phase should provide results that can be used to improve program performance and to assist in refining program objectives and modifying

national priorities. Improvements are being sought continually through this process to enable the government to be more responsive to the needs of decision-makers and the public.

Vision for Financial Management Systems

Financial management systems are an integral part of a larger information systems support structure necessary to deliver effective processing and management information for the federal government. This support structure includes the federal information technology infrastructure and systems supporting program and financial management activities (see Illustration II-2). The federal information technology infrastructure includes computer hardware and system software, telecommunications capabilities such as wide/local area networks and data transfer capabilities, and overall management of information resources. Federal systems often need to communicate with systems of non-federal organizations to meet their program objectives. These systems may be non-financial systems such as state and local law enforcement systems, or financial systems such as those used to process loans guaranteed by the federal government.

Illustration II-2



Financial management systems encompass the financial systems (e.g., core financial, payroll, travel) and the financial portions of mixed systems (e.g., revenue, acquisition, loan, grant) necessary to support program execution. Financial systems support the financial functions required to track financial events, provide financial information significant to the financial management of the agency, and/or are required for the preparation of financial statements. In addition to being used by agency financial managers, they are necessary for program managers to manage the financial status of their programs. Mixed systems support both financial and non-financial functions and provide information needed by both. Non-financial systems support a variety of non-financial functions necessary to carry out programs. These systems involve processes necessary to carry out programs not involving financial events.

The financial management systems in the federal government must be designed to support the vision articulated by the government's financial management community. This vision requires financial management systems to support the partnership between program and financial managers and to assure the integrity of information for decision-making and measuring of performance. This includes the ability to:

- collect accurate, timely, complete, reliable, and consistent information;
- provide for adequate agency management reporting;
- support governmentwide and agency level policy decisions;
- support the preparation and execution of agency budgets;
- facilitate the preparation of financial statements, and other financial reports in accordance with federal accounting and reporting standards;
- provide information to central agencies for budgeting, analysis, and governmentwide reporting, including Consolidated Financial Statements; and
- provide a complete audit trail to facilitate audits.

In support of this vision, the federal government must establish governmentwide financial management systems and compatible agency systems, with standardized information and electronic data exchange, to support program delivery, safeguard assets, and manage taxpayer dollars. The new environment according to this vision includes:

- **Governmentwide Financial Management Systems** which contain information on the federal government as a whole or where particular financial management services are handled for multiple agencies by a single, designated service provider. These systems support governmentwide decision-making, centralized processing, and consolidated information requirements. Examples of such systems are:

- OMB's system for budget formulation and preparation of the President's Budget;
 - Treasury's systems for disbursements and collections, public debt management, Consolidated Financial Statement preparation, and appropriation control and reporting;
 - Office of Personnel Management's systems for retirement and health benefits;
 - General Service Administration's system for federal procurement data collection; and
 - Department of Housing and Urban Development's credit alert system on delinquent debtors.
- **Compatible Agency Systems** which support the operations of an agency and maintain information at or below the level required for governmentwide reporting purposes. For the governmentwide financial management systems to have meaningful information, the agency systems must be compatible with governmentwide systems and other agency systems. To be compatible, agency systems need to supply information to governmentwide systems which is consistent with governmentwide standards (format, definition, and content) for central agencies. Information reported must be consistent with information from other agencies to allow for consolidation and to support standardized data links with other agency and related non-federal financial management systems.
 - **Standardized Information** which enables systems to communicate with each other, exchange data, and provide consistent information across the government. Information standardization requires information definitions to be standardized wherever possible, classification structures to be used consistently throughout the government, and data integrity to be maintained at both the agency and governmentwide levels.
 - **Electronic Data Exchange** which facilitates processing and accuracy of information flows between systems. Moving data electronically using networking capabilities eliminates duplicative manual processes, reduces the risk of data loss or delays in providing information to users, and eliminates transcription errors resulting from manual reentry and reinterpretation. Further, electronic data exchange streamlines processing, improves data control by allowing the more rapid analysis of transaction trends and individual financial events, and facilitates providing access to multiple levels of information. However, the electronic transmission of data must be protected by rigorous security and internal control procedures.
-

Financial Management Systems Policy

Federal information systems encompass the organized collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual. OMB Circular A-130, "Management of Federal Information Resources," governs agency management of information systems. Financial management systems are a subset of federal information systems. They are governed by both OMB Circular A-130 and OMB Circular A-127, "Financial Management Systems."

Financial management systems must be designed with effective and efficient interrelationships between software, hardware, personnel, procedures, controls, and data contained within the systems. To be integrated, financial management systems must have (i) standard data classifications (definition and formats) established and used for recording financial events; (ii) common processes used for processing similar kinds of transactions; (iii) internal controls over data entry, transaction processing, and reporting applied consistently; and (iv) a system design that eliminates unnecessary duplication of transaction entry.

The concept of integration involves the logical design of financial management systems to encompass all elements necessary to support the management cycle and changing work processes. However, because of rapidly changing technology, the physical design necessary for integration will require that the physical elements of the information technology infrastructure (e.g., software, hardware, telecommunications) will, by necessity, need continual adjustment within an overall information technology strategy.

The financial management systems policy stated in OMB Circular A-127 requires that each agency establish and maintain a single, integrated financial management system. Without a single, integrated financial management system to ensure timely and accurate financial data, poor policy decisions are more likely due to inaccurate or untimely information; managers are less likely to be able to report accurately to the President, the Congress, and the public on government operations in a timely manner; scarce resources are more likely to be directed toward the collection of information rather than to delivery of the intended programs; and modifications to financial management systems necessary to keep pace with rapidly changing user requirements cannot be coordinated and managed properly. The basic requirements for a single, integrated financial management system are outlined in Section 7 of OMB Circular A-127.

Having a *single, integrated financial management system* does not mean having only one software application for each agency covering all financial management system needs. Rather, a *single, integrated financial management system* is a unified set of financial systems and the financial portions of mixed systems encompassing the software, hardware, personnel, processes (manual and automated), procedures, controls, and data necessary to carry out financial management functions, manage financial operations of the agency, and report on the agency's financial status to central agencies, Congress, and the public. Unified means that the systems are planned for and managed together, operated in an integrated fashion, and linked together electronically

in an efficient and effective manner to provide agencywide financial system support necessary to carry out the agency's mission and support the agency's financial management needs.

To support efforts to establish and maintain a single, integrated financial management system, each agency needs to follow good management practices which include (i) developing and updating annually an agencywide inventory of financial management systems, (ii) developing and updating annually an agencywide financial management system plan, (iii) reviewing agency financial management systems and incorporating the results in system plans, and (iv) developing and maintaining agency financial management system directives.

It is critical that financial management system plans support the agency's mission and programs, including planned changes to them, and that the financial management systems plans are incorporated into the agency's plans for information technology infrastructure and information systems as a whole. Further, system design efforts should include an analysis of how system improvements, new technology supporting financial management systems, and modifications to existing work processes can together enhance agency operations and improve program and financial management. Reassessing information and processing needs and redesigning processes, procedures, and policies are essential steps to meeting user needs.

Framework for Integrated Financial Management Systems

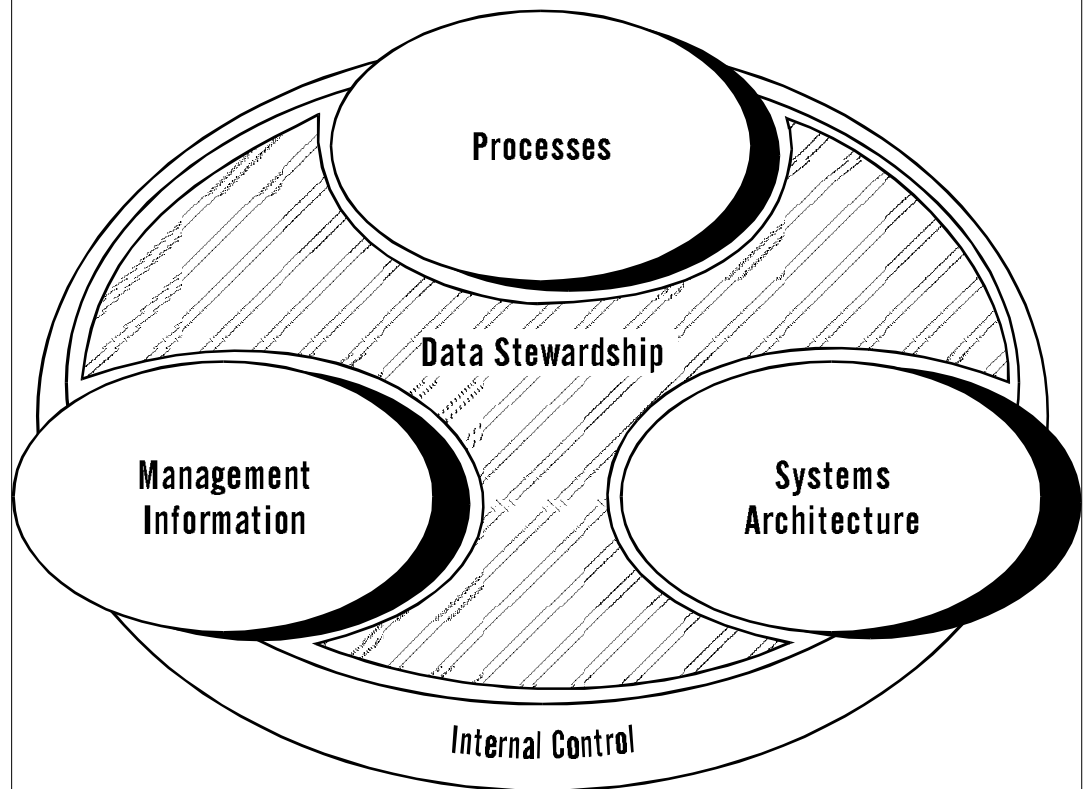
To develop any integrated information system, it is critical that the senior systems analysts and systems accountants identify:

- the scope of the functions to be supported (processes),
- how data quality will be assured (data stewardship),
- the information to be processed (management information),
- how systems fit together to support the functions (systems architecture), and
- safeguards needed to ensure the integrity of operations and data (internal control).

All of these pieces must be brought together in a model such as the one shown in Illustration II-3. These pieces must work together in order to be an effective integrated information system. A change to any part of the model will require determination of the implications on other parts of the model. For example, a new reporting requirement may require changes throughout the entire model.

Illustration II-3

Integrated Model for Federal Information Systems



Systems supporting financial management activities of the federal government are a critical subset of federal information systems. As such, the integrated model for federal information systems has been used in this document to define what constitutes an integrated budget and financial system and to describe the relationships between the various elements of an integrated financial management system for program execution. Specifically, the elements addressed are:

- **Processes in Program Execution** to support program delivery/financing and financial event processing necessary to carry out programmatic objectives.
- **Data Stewardship** to manage the data within the financial management systems. Data stewardship provides the link between program execution processes, information, and systems architecture to ensure appropriate

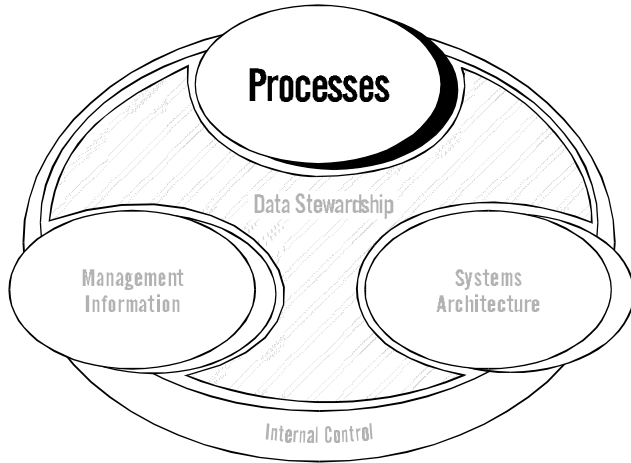
information is collected, classified, and accurately maintained and reported in a timely manner.

- **Management Information for Program Execution** to capture and classify information on the status and use of financial resources at federal agencies, the efficiency of government operations, the effectiveness of program delivery, and individual financial events occurring during program execution. The information architecture includes both event level and reporting level architectures.
- **Systems Architecture for Program Execution** to support program execution processes and the effective and efficient collection, maintenance, and reporting of management information.
- **Internal Control** to provide reasonable assurance over the effectiveness and efficiency of operations in meeting basic business objectives, the reliability of financial reporting, and compliance with applicable laws and regulations.

These elements make up the integrated model for federal financial management systems. To support program execution effectively, the framework for federal financial management systems must also include a management support structure to implement the model that considers the following areas: planning, system design, development approaches, security, training, documentation, application testing, transitioning to the new system, operations support, change control, and version control.

If all of the elements of the framework for federal financial management systems are implemented effectively, the result should be an integrated financial management system for the federal government that supports the Congress and the President, who are responsible for charting the direction of government operations; program and financial managers, who are responsible for carrying out government initiatives; beneficiaries, who receive aid from the government; suppliers, who provide goods and services to the government; and the public to whom the government is accountable. All these constituent individuals or groups are “customers” of federal financial management systems and deserve high quality service.

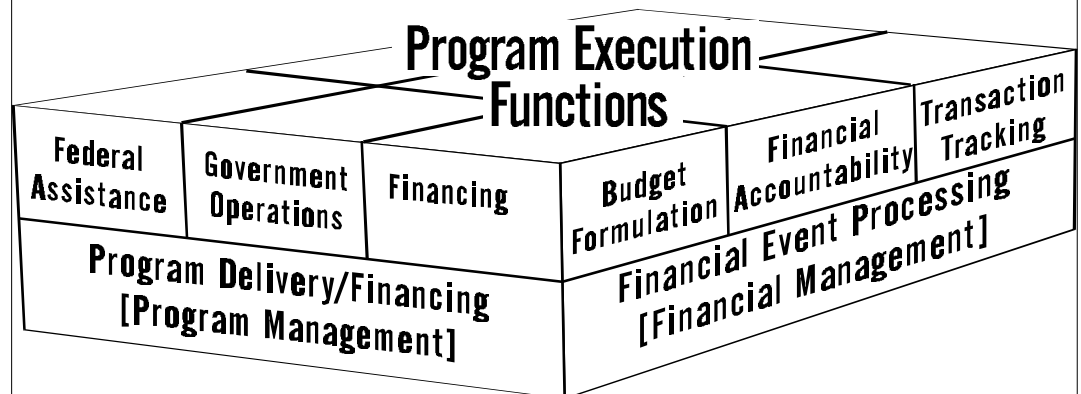
III. Processes in Program Execution



Providing program services in the federal government is a complex process. Agencies must use a multitude of program delivery strategies to take into account the organizational structure; available resources including staffing, funding, and equipment; the future direction of the program; and, finally, the administration of day-to-day operations of the programs including execution and oversight. Inherent in all program delivery activities are the financial implications of actions taken. The federal government is accountable not only for the effective delivery of program services but also for the effective, efficient, and economical use of resources, both financial and non-financial. Program execution is the key to carrying out programmatic objectives. To be effective, program execution must provide for the integration of program delivery/financing functions and financial event processing functions (see Illustration III-1).

Illustration III-1

Processes in Program Execution



Program Delivery/Financing

The federal government is charged through the budget and appropriation process with carrying out a variety of programs for the good of the country. These programs range from providing security for the country, monitoring the airways, and protecting the environment to providing assistance to needy segments of the population and collecting the taxes to support government activities. Program officials must select the appropriate program delivery processes within the guidelines established by Congress and the administration.

Many programs require a combination of several delivery mechanisms to be effective. The primary mechanisms for program delivery can be divided into federal assistance and government operations. Financing provides financial resources to fund federal assistance and government operations. Each of these delivery mechanisms requires effective, efficient systems to support their objectives.

Federal Assistance encompasses those functions providing monetary support. Federal assistance includes payments or promises made outside the federal sector for goods or services in pursuit of programmatic objectives. The payments can be made to state governments, local governments, private organizations, or individuals. Federal assistance may also include promises by the federal government to pay in the case where the primary debtor fails to perform. Federal assistance can be made either directly or through third parties. Federal assistance includes the functions of transfer payments, grants and subsidies, loans, and insurance, as described in Illustration III-2.

Government Operations encompasses those functions necessary to run the basic operational activities of the government and to provide services, such as law enforcement and national defense, which are non-monetary in nature. Agencies carry out government operations through the use of personnel and/or government supplies, equipment, facilities, and contracts with outside parties. Government operations include the functions of personnel, acquisition, property management, and inventory management, as described in Illustration III-3.

Financing encompasses those functions necessary to provide the financial resources to fund government operations and federal assistance. Financing is the government's way of generating the necessary financial resources to support the objectives of the federal government and its programs. This support is provided through the government's taxing, borrowing and other revenue generating authorities. Financing includes the functions of taxation, fee and revenue generation, public debt, deposit funds, and intragovernmental collections, as described in Illustration III-4.

Illustration III-1

Program Delivery Functions - Federal Assistance

<i>Transfer Payments</i>	Payment of social insurance benefits (such as social security, Medicare, supplemental security income, and unemployment compensation) and other payments to individuals that are not made in exchange for the provision of goods and services (such as food stamps).
<i>Grants and Subsidies</i>	Providing grants (including medicaid, highway construction, and social services block grants) and subsidies (such as for farm price supports and low income housing, but excluding loan subsidies) made to state and local governments, other non-federal organizations, or individuals.
<i>Loans</i>	Providing direct loans or loan guarantees. Direct loans are loans issued by the agency to a borrower, who then repays the loan to the agency. Guaranteed loans are loans issued by a third-party lender to a borrower with the repayment of the loan guaranteed by the government. In cases where the borrower defaults on a guaranteed loan, the agency pays the lender all or a portion of the loan, depending on the guaranteed loan program rules.
<i>Insurance</i>	Payment of insurance claims under deposit insurance, pension benefit guarantees, crop insurance, and other government programs in which the government provides protection to individuals or entities against specified risks.

Illustration III-3

Program Delivery Functions - Government Operations

<i>Personnel</i>	Collects and maintains data related to the employment process, including position control, payroll information, employer share of benefits, retirement contributions and pension benefits, and other retirement and post-employment benefits.
<i>Acquisition</i>	Obtaining materials, services, and property necessary to support program execution and managing the delivery of goods and services. It includes payments to suppliers, including other federal agencies.
<i>Property Management</i>	Management and administrative activities associated with real property and personal property.
<i>Inventory Management</i>	Management and administrative activities associated with inventory and related property.

Illustration III-4
Program Financing Functions

<i>Taxation</i>	Collection of receipts under the taxing powers of the government, such as income, excise, and social security taxes and customs duties.
<i>Fee and Other Revenue Generation</i>	Collection of receipts and other amounts resulting from the powers of government other than taxation including the following: deposits of earnings from the Federal Reserve System; fees for permits, regulation, and judicial services; fines, penalties, and forfeitures; gifts and contributions; interest, dividends, rent and royalties; sale of products, services, and property; and other sources.
<i>Public Debt</i>	Issuance and redemption of debt securities to and from the public and government accounts, and the payment of interest thereon.
<i>Deposit Funds</i>	Supports accounts held outside the budget that record amounts held temporarily until ownership is determined (such as earnest money paid by bidders for mineral leases) or held by the government as agent for others (such as state and local taxes withheld from federal employees' salaries). Funds in these accounts serve to finance the costs of government operations and federal assistance.
<i>Intragovernmental Collections</i>	Collection of amounts from other federal entities, such as interest paid by Treasury on public debt securities held by trust funds and other government accounts, the employer share of federal employee retirement, the general fund subsidy of the

Financial Event Processing

Systems that support program execution, to be truly effective, cannot separate program delivery from the support necessary to process and track financial events. The linkage of program delivery and financial event processing is crucial to support information needs of management, central agencies, customers, and the American public. Financial event processing covers those mechanisms necessary to properly process and track data on financial events. Financial data integrity control maintains the necessary control functions to ensure that financial events are properly tracked and recognized. To be effective and ensure accountability, financial event processing must provide the necessary financial control over the activities of the federal government.

Financial event processing can be separated into three major functions: budget formulation, financial accountability, and transaction tracking.

Budget Formulation is the annual cycle wherein budget estimates are developed (formulated), using projections and forecasts, beginning each spring within the agencies' organizational (program) units, submitted to the OMB for review, transmitted by the President to the Congress, and tracked through the Congressional appropriation process. Budgets are formulated based upon proposals, evaluations, prior performance, and policy decisions.

(OMB Circular A-11, "Preparation and Submission of Budget Estimates," provides the guidance for the budget formulation process.)

Financial Accountability provides an accounting for the resources of an entity from four different perspectives. It provides the framework needed for legal accountability for budgetary resources, stewardship over assets, tracking of cash resources, and management and control of costs. The impact of accounting transactions must be controlled to ensure integrity of the data. Each perspective of financial accountability must properly reflect the impact of individual financial events in information categories summarizing transaction data associated with the financial event. Transaction data associated with financial events generally reflect a change in the financial condition of an entity. Financial events often have non-financial data associated with them which is necessary for performance measurement. Financial accountability includes the functions of budget execution, financial accounting, cash management, and cost accounting, as described in Illustration III-5.

Transaction Tracking captures data to identify, record, and report transactions arising from individual financial events occurring while executing programs or necessary for financial accountability. Transaction tracking includes the functions of receivables/collections, payables/disbursements, payroll, travel, property accounting, and inventory accounting, as described in Illustration III-6.

Illustration III-5

Financial Accountability Functions

Budget Execution

Includes funds control and provides features to record, distribute, and control budget authority and spending in accordance with the provisions of OMB Circular A-34, "Instructions on Budget Execution." Budget execution provides the ability to track the effects of financial events on the sources and uses of budgetary resources authorized by the President and Congress. Its primary purpose is to ensure that spending does not exceed funds appropriated or authorized. It supports the self-balancing relationships of the budgetary accounts in the general ledger to maintain financial data integrity.

Financial Accounting

Provides the ability to track the effects of financial events on the financial position of the federal government and results of operations. This is accomplished through managing the basic accounting equation: $\text{Assets} = \text{Liabilities} + \text{Net Position}$. This function provides an overall accountability infrastructure to ensure that transactions are reported accurately and that consistent definitions are used in recording transactions.

Cash Management

Supports the analysis of agency collections, deposit activity, disbursements, investments, and foreign currency transactions and balances, including cash held outside of fund balances with the Department of the Treasury for agency cash management purposes. It also provides information to the Department of the Treasury for management of the cash position of the federal government as a whole. This is accomplished by managing the equation: $\text{Beginning of Year Balance of Cash} + \text{Sources of Cash} - \text{Uses of Cash} = \text{End of Year Balance of Cash}$. This identifies the impact of obtaining and using resources on the cash position of the agency and the federal government.

Cost Accounting

Supports the capture of costs for managerial and other purposes such as establishing fee/rate/price structures to cover costs by establishing cost objectives and performing cost analyses and comparisons. Cost accounting and performance measurement, when coordinated, will provide management with a more complete picture of operations. Cost accounting provides the ability to track the effects of financial events on the cost of activities of the federal government and to distribute those costs within and between agencies to reflect the full costs of government.

Illustration III-6
Transaction Tracking Functions

<i>Receivables/Collections</i>	Supports activities associated with recording, billing, tracking and collecting amounts due the government.
<i>Payables/Disbursements</i>	Supports activities associated with establishing payables and disbursing funds. Examples of disbursement types include transactions for the payment of goods and services received, payroll, travel, advances, prepayments, imprest fund reimbursements, loans, grants, transfer payments to persons, and insurance payments.
<i>Payroll</i>	Performs the compensation and benefit activity for civilian and military employees of the government and is highly interrelated with the personnel function of government operations. The payroll function and its internal controls achieve objectives both within the organization and other organizations involved in funding and monitoring the organization's payroll operations.
<i>Travel</i>	Supports the processing of transactions associated with official government travel activities in accordance with the Federal Travel Regulation and the Joint Travel Regulations. The function records and tracks the status of travel authorizations and travel vouchers as each transaction is prepared and approved. The function also supports the preparation of travel advances associated with travel authorizations, as well as the processing of employee and transportation-related vendor claims.
<i>Property Accounting</i>	Records and controls the financial and accounting components of capitalized property and controlled property. It maintains detailed accounting information concerning fixed assets and other property maintained on an individual basis throughout their life. The types of assets this function accounts for include land, buildings and other structures, personal property, contractor held property, and equipment.
<i>Inventory Accounting</i>	Records and controls the financial and accounting components of inventories and related property. Inventory is tangible personal property that is (1) held for sale, (2) in the process of production for sale, or (3) to be consumed in the production of goods for sale or in the provision of services for a fee. Related property includes items such as operating materials and supplies, seized and forfeited assets, stockpiles, and other property identified in the Statement of Federal Financial Accounting Standards Number 3, <i>Accounting for Inventory and Related Property</i> .

Integration of Program Delivery/Financing and Financial Event Processing

Integration of program delivery/financing and financial event processing is the foundation for supporting program execution. This integration comes through the use of common processes and standardized data to effectively and efficiently manage and report on the use of financial resources and to track the financial implications of activities of the federal government. Standardized financial event processing facilitates providing consistent financial information to program and financial managers. It ensures that adequate financial controls are in place through the linkage of the budget formulation, financial accountability, and transaction tracking processes. Prescribed accounting standards applicable to the federal government provide assurance that similar transactions will be recorded consistently and federal agencies can report in a meaningful and uniform manner.

Each of the major processes necessary to support program execution consists of individual functions, as described above, that must be integrated to achieve the desired results. Three types of integration relationships exist among these functions. The first is the relationship between program delivery/financing functions and transaction tracking functions. Financial event processing begins in the program execution processes where the financial events are first identified or created. The relationship between program delivery/financing and transaction tracking requires proper identification and recording of financial events as they occur. Typical relationships of this type are provided in Illustration III-7.

The second type of relationship exists between the budget formulation/transaction tracking functions and the financial accountability functions. Here the relationship supports the collection of summary level information necessary for reporting and control purposes. Illustration III-8 provides typical relationships between the budget formulation/transaction tracking functions and the financial accountability functions.

The third type of relationship is between different program delivery/financing functions or between different financial event processing functions in cases where one function provides information to another function as part of a particular processing cycle. Such relationships exist (i) between program delivery/financing functions, such as acquisition with property management and inventory management, and (ii) between financial event processing functions, such as travel with payables/disbursements and receivables/collections. Many such relationships may exist depending on particular processing cycles and agency programs. Illustration III-9 provides examples of such typical relationships.

Illustration III-7

Integration of Program Delivery/Financing with Transaction Tracking

(Typical Relationships)

This chart shows where program delivery/financing functions must provide detailed data to the transaction tracking functions.

			Transaction Tracking					
			Receivables/Collections	Payables/Disbursements	Payroll Function	Travel Function	Property Accounting	Inventory Accounting
Program Delivery/Financing	Federal Assistance	Transfer Payments	✓	✓				
		Grants and Subsidies	✓	✓			✓	
		Loans	✓	✓			✓	
		Insurance	✓	✓				
	Government Ops	Personnel			✓	✓		
		Acquisition		✓			✓	✓
		Property Management					✓	
		Inventory Management						✓
	Financing	Taxation	✓	✓				
		Fee and Other Revenue Generation	✓	✓				
		Public Debt	✓	✓				
		Deposit Funds	✓	✓				
		Intragovernmental Collections	✓	✓				

✓ Financial event processing occurs as a direct result of program activity

Illustration III-8

Integration of Budget Formulation and Transaction Tracking with Financial Accountability (Typical Relationships)

<p>This chart shows where summary information and control are required in order to support the four different types of financial accountability.</p>		Financial Accountability			
		Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Budget Formulation		✓	✓		✓
Transaction Tracking	Receivables/Collections	✓	✓	✓	
	Payables/Disbursements	✓	✓	✓	✓
	Payroll	✓	✓		✓
	Travel	✓	✓		✓
	Property Accounting		✓		✓
	Inventory Accounting		✓		✓

✓ Relationship exists to support summary information and control

Illustration III-9

Integration Among Functions in the Same Categories

This chart shows where transaction tracking functions provide data to other transaction tracking functions.

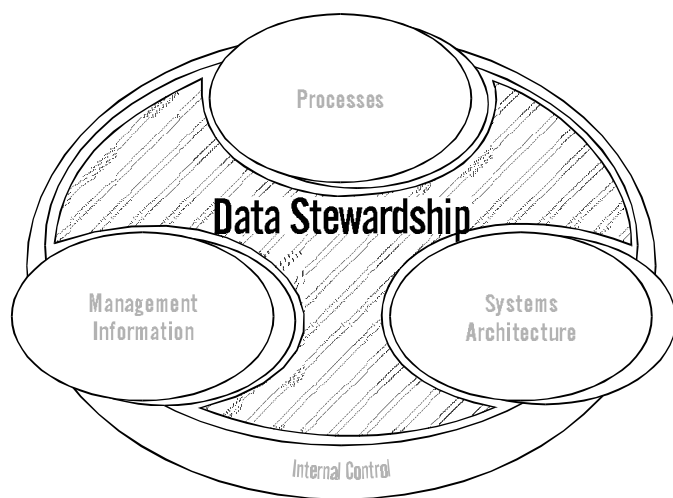
		Transaction Tracking (selected functions)		
		Receivables/Collections	Payables/Disbursements	Payroll
Transaction Tracking	Receivables/Collections		✓	
	Payables/Disbursements	✓		
	Payroll	✓	✓	
	Travel	✓	✓	✓
	Property Accounting	✓		
	Inventory Accounting	✓		

This chart shows where program delivery functions provide data to other program functions.

		Program Delivery (selected functions)		
		Acquisition	Property Management	Inventory Management
Program Delivery	Federal Assistance	Transfer Payments		
		Grants and Subsidies	✓	
		Loans	✓	
		Insurance		
	Government Ops	Personnel		
		Acquisition	✓	✓
		Property Management	✓	
		Inventory Management	✓	

✓ Information provided between functions

IV. Data Stewardship



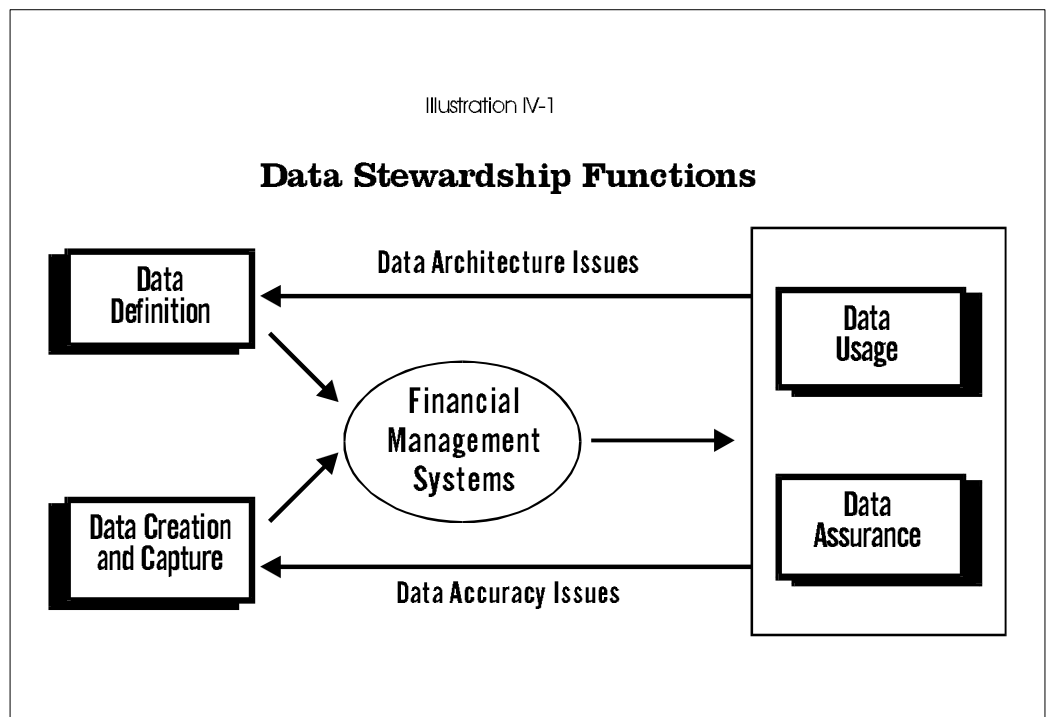
Data stewardship is the process of managing information necessary to support program and financial managers and assuring data captured and reported is accurate, accessible, timely, and usable for decision-making and activity monitoring. Data stewardship is necessary to meet the financial and related information needs of central agencies, program agencies, and individual managers based on their different levels of need. Data stewardship provides the structure, oversight, and assurance that data about government activities can be accurately translated into meaningful information to support both program and financial management needs. The objective of data stewardship is to address, in a systematic manner, the following:

- **Data integrity** to provide accurate, complete, timely, and reliable information by ensuring consistency among data definitions, sources, controls, and edit routines.
- **Data collection synchronization** to adopt commonly accepted reporting timeframes logically grouped by types of data being reported, to promote consistency with previously reported data, and to minimize the reporting burden.
- **Reduced data redundancy** to eliminate inconsistencies due to multiple occurrences of the same data elements.
- **Data accessibility** to make data available to authorized users when needed.
- **Data availability** to enable transfer of data to other systems for operational, analytical, and forecasting processes.
- **Flexibility** in the data management processes to meet new financial information requirements and to include provisions for adopting financial management performance measures.

Critical functions within data stewardship tend to fall into four categories: data definition, data creation and capture, data usage, and data assurance (see Illustration IV-1). Effective data stewardship requires that:

- **Data definition** clearly describes requirements and characteristics of data to be maintained in financial management systems,
- **Data creation and capture** records and reports data in compliance with definitions,

- **Data usage** derives information from data consistent with the intended definitions and uses, and provides feedback to the data definition function when data are inadequate to meet user needs for information, and
- **Data assurance** provides attestation to or comments on the integrity of the information within the system, which are used by other functions to improve data maintained by financial management systems.

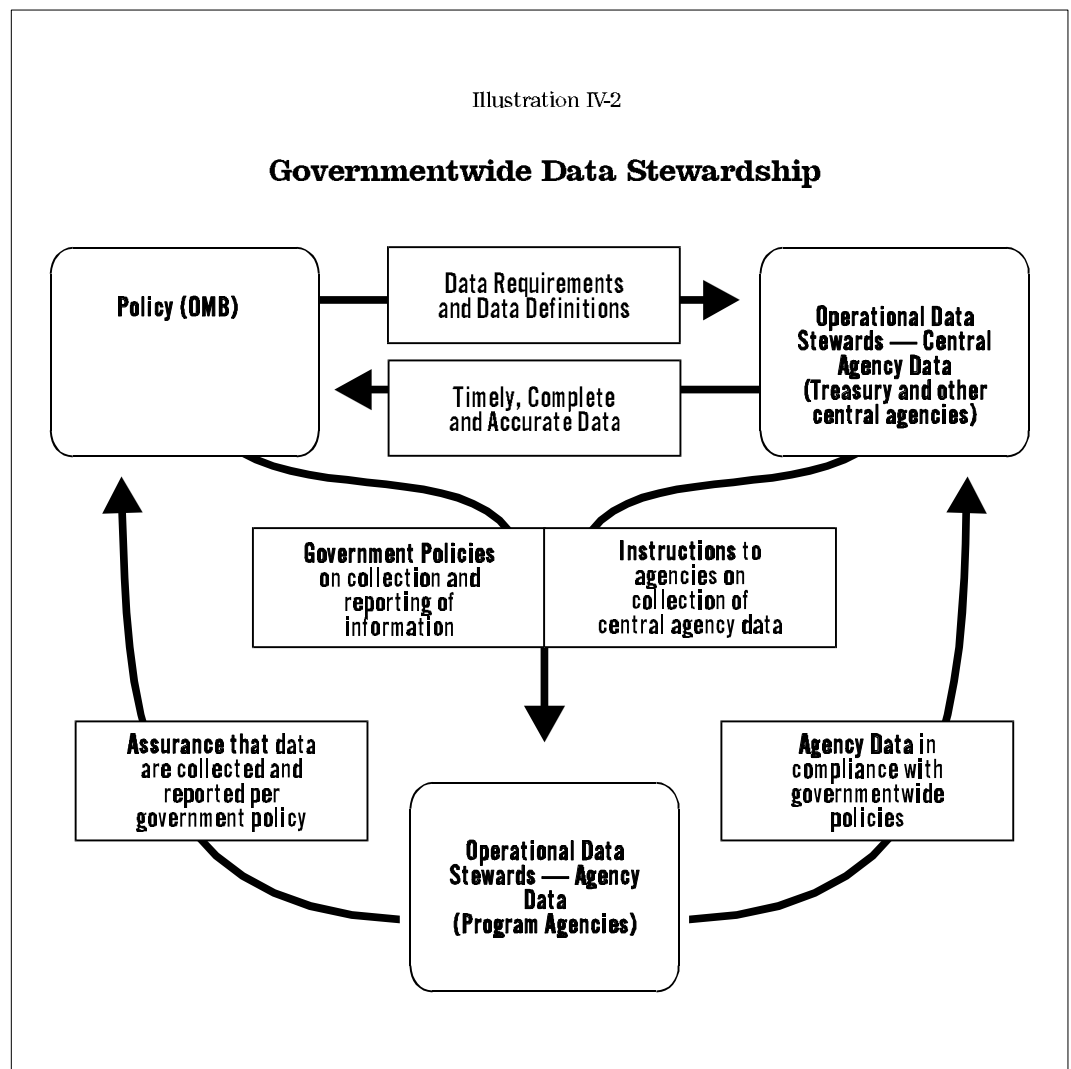


Data stewardship at the governmentwide level distributes these functions across all agencies and requires coordination and cooperation. Responsibility for good data stewardship is shared among *OMB*, the *Department of the Treasury* and other central agencies, and *program agencies and their programs*. Under the shared responsibility concept, each party must carry out assigned functions necessary for the definition, creation and capture, usage, and assurance of reliable financial information within the federal government.

At the agency level, data stewardship ensures that data is managed to support both the governmentwide information needs and the agency's specific needs. A key tool for assisting data stewardship in agencies is the concept of financial data integrity control. Financial data integrity control is designed into an agency's financial management systems to provide a structural discipline over data used in the financial accountability functions of budget execution, financial accounting, cash management, and cost accounting and to ensure consistency with data used in the transaction tracking functions.

Governmentwide Data Stewardship

Governmentwide data stewardship must assure that data used by central agencies to support governmentwide decision making and reporting are timely, accurate, and usable. Effective governmentwide data stewardship is part of the responsibilities of OMB, Treasury, and other agencies collecting selected governmentwide data. Central agencies must clearly communicate to program agencies and their programs the governmentwide data requirements and provide clear instructions for the collection of such data. Although central agency information is dependent on the integrity of data provided by program agencies, central agencies must still perform adequate verification to assure that data collected are in compliance with reporting requirements. Illustration IV-2 provides the overall roles and responsibilities for governmentwide data stewardship along with critical functions that are needed to maintain the integrity of data on a governmentwide basis.



The Office of Management and Budget (OMB) is responsible for defining governmentwide information policy and is accountable for the integrity of governmentwide definitions of financial and related data essential for monitoring budgetary integrity, operating performance effectiveness, and stewardship over government resources. Specific responsibilities include:

- establishing government policies for collection and reporting of governmentwide information;
- ensuring integrity and consistency in governmentwide definitions including maintaining a master governmentwide data dictionary; and
- coordinating, among OMB, Treasury, and the program agencies, the determination of acceptable parameters for the collection of the governmentwide data. OMB may delegate the oversight of certain data elements in the governmentwide data dictionary to other responsible parties as the data dictionary is created.

The Department of the Treasury and other central agencies (such as GSA and OPM) are the operational data stewards for central agency data. Specific responsibilities include:

- maintaining the governmentwide financial information systems infrastructure;
- collecting the program agency financial data necessary to meet the central agencies' information requirements; and
- supporting governmentwide data integrity by validating compliance with reporting requirements and reasonableness of the data provided within predefined parameters.

Program agencies and their program managers are the operational data stewards for agency data necessary to carry out the program mission(s) of the agency, record and report on agency financial events in conformance with government policies and agency needs, and maintain the integrity of the agency data created. Specific responsibilities include:

- processing the financial transactions;
- collecting and recording the agency information;
- maintaining data dictionaries supporting the agencywide data classification structure that complies with governmentwide policy and agency information requirements; and
- providing timely, complete, accurate and consistent financial information on agency resources and operations.

Agency Level Data Stewardship

Agency level data stewardship must ensure the integrity of (i) data provided to the central agencies, the Congress, and external organizations; and (ii) data available to internal management for decision making. Data stewardship, at the program agency level, requires providing assurance that agency data collection and reporting processes are in compliance with governmentwide policies and regulations and meet the agency's unique mission and management objectives.

Illustration IV-3 outlines the typical roles and responsibilities of persons supporting the data stewardship functions for an agency. Specific needs of an agency may result in requirements beyond those described here that are unique to a particular operation or financial system. As a result, each data stewardship operation may have a unique look.

It is critical that data definers and providers clearly understand who the data users are, and how the users expect to use information from the financial management systems. While each of the identified roles has definite responsibilities, they may overlap, with a single person or organization performing multiple roles. For example, data users and providers may also perform some assurance functions.

Further, agency data stewardship functions do not exist just at one level within an agency. In fact they are replicated at many levels within the data chain. This layering of roles is necessary to assure that as requirements are defined downward in the data chain and information is disseminated upward in the data chain, the information contained within the systems is accurate, timely, consistent, and useful.

Illustration IV-3
Agency Data Stewardship Roles and Responsibilities

Role	Responsibility	Functions
<i>Data Definers</i>	Their primary responsibility is to define the processes occurring within and auxiliary to the financial management systems and define the sources and flows of data needed by these processes. Data definers perform two key roles—functional data steward and systems data steward. They are often responsible for maintenance of the functional user requirements documentation and the data dictionary for the system. They are normally supported by financial policy analysts and technical systems designers, analysts, and programmers.	<p>Their function is to ensure that a logical data architecture is contained within the system and that it is consistent with critical information requirements such as the Standard General Ledger. This includes the migration to new standards and approval and implementation of changes.</p> <p>The functional data steward obtains data requirements from various sources and converts the requirements into coding and journal entry standards for operational users of the system.</p> <p>The systems data steward obtains (functional) data requirements and ensures that consistent naming conventions are maintained within the programming and tables for each element defined.</p>
<i>Data Providers</i>	These individuals are responsible for implementing the system requirements, modifications, or replacements. They are responsible for the operation of the system and provide and maintain the data within the system. They are also responsible for operation of data access mechanisms such as data query and report writer routines and the production and dissemination of prescribed reports from the system. Additionally, they conduct periodic reviews and reconciliations of financial and program information with internal and external sources to assure adequacy of controls over processes within the systems.	<p>The systems manager assures that the system is able to accept and process the data coming to it from its many different sources. This person is the functional operator of the system who defines all access and data requirements for the incoming data and users.</p> <p>Operational data providers are required to assure that data have been prepared under sufficient general ledger controls and that systems transaction validation edits are performed prior to updating the system. This includes maintenance of local databases and data feeds when necessary.</p>
<i>Data Users</i>	These individuals utilize the information from the system for decision-making or for updating other systems.	Users may include operational users, program/budget analysts, program managers, financial analysts, and external parties or organizations. They often have varying professional backgrounds and information requirements. They may require financial information that is narrow in focus or broad information dealing with the entity as a whole. Access to the system may be obtained through use of predefined reports, ad hoc reports, or raw data queries.
<i>Data Assurers</i>	These individuals are responsible for independently reviewing and verifying the data contained within the system and provide both broadbased and limited attestations of the legality and/or accuracy of agency actions and/or reports.	<p>Independent auditors review and verify whether agency reports fairly present the financial position and results of operations, whether internal controls are adequate, and whether laws and regulations have been complied with.</p> <p>Other independent review and verification functions include certifying officials assuring the availability of funds and propriety of payments; managers acting as certifying officials when attesting to the accuracy of reports; and inspectors general reporting on program operations.</p>

Financial Data Integrity Control at the Agency System Level

Financial data integrity control provides a framework upon which agency data stewardship functions can be built. By tying transaction and summary financial data to a general ledger, discipline is established to ensure that lower levels of detail can be summarized consistently for different financial accountability purposes and that the various financial events occurring within an agency are accounted for using a recognized structure. The U.S. Government Standard General Ledger provides standardization across agencies to ensure a level of consistency in recording financial events and reporting throughout the federal government.

Financial data integrity control imposes a discipline on the tracking of effects of financial events on budgetary resources, financial position and results of operations, cash position, and costs of activities. This discipline assures that financial events are posted completely and consistently with applicable accounting principles and standards covering the four areas within financial accountability—budget execution, financial accounting, cost accounting, and cash management. Further, it assures that sufficient detail is available from the transaction tracking processes to support summarized information maintained for financial accountability. Illustration IV-4 summarizes the financial accountability functions in terms of their objectives and data requirements.

Effective and efficient financial data integrity control requires:

- the application of balancing rules to maintain control equations that support the accounting principles and standards for the entity;
- identification of transaction sources to allow tracing of general ledger balances to original transactions;
- recognition of the period to which a transaction applies consistent with normal business and transaction cycles; and
- sufficient detail captured from events to support proper classifications and summarizations of financial information.

Financial data integrity control provides the structural framework to ensure financial accountability functions within an agency are maintained consistently throughout the financial management systems.

Illustration IV-4
Financial Accountability Data Relationships

Functions	Objective	Data Requirements
<i>Budget Execution</i>	Provides the ability to track the effects of financial events on the sources and uses of budgetary resources authorized by the President and Congress. This is accomplished by ensuring that resources used do not exceed resources authorized.	<p>The data architecture must provide classifications to support budgetary control.</p> <p>The chart of accounts must include a complete listing of the account numbers used to support the control needed to ensure resources used do not exceed resources authorized.</p> <p>Posting of financial events to the financial management systems must create balances in the agency's general ledger that reflect the status of budget execution.</p> <p>Account numbers established by program agencies to manage budgetary resources at levels more detailed than established by appropriation legislation should be consistent with the appropriation requirements.</p>
<i>Financial Accounting</i>	<p>Provides the ability to track the effects of financial events on the financial position of the federal government and results of operations.</p> <p>This is accomplished through managing the basic accounting equation: $\text{Assets} = \text{Liabilities} + \text{Net Position}$</p>	<p>The data architecture must collect data consistent with the basic accounting equation.</p> <p>The chart of accounts of the agency should include a complete listing of the account numbers used to support the basic accounting equation, reporting to central agencies, preparation of financial statements, and specific agency management reporting needs. Account numbers established by program agencies to track financial events at levels more detailed than established for central agency reporting purposes should be consistent with the governmentwide financial classifications.</p> <p>Posting of financial events to the financial management systems must create balances in the general ledger that reflect the financial position of the entity based on the basic accounting equation.</p>
<i>Cash Management</i>	<p>Provides the ability to track the effects of financial events on the cash position of the federal government to enable the Department of the Treasury to manage the cash position of the federal government.</p> <p>This is accomplished by managing the equation: $\text{Beginning of Year Balance of Cash} + \text{Sources of Cash} - \text{Uses of Cash} = \text{End of Year Balance of Cash}$</p>	<p>The data architecture must provide classifications to support management of the cash of the federal government and reporting of cash activity.</p> <p>The chart of accounts must, at a minimum, have codes to provide control totals to track cash activity by receiving or disbursing location.</p> <p>This function links the budget execution and financial accounting functions by examining the impact of obtaining and using resources on the cash position of the agency.</p>
<i>Cost Accounting</i>	Provides the ability to track the effects of financial events on the cost of activities of the federal government. This is accomplished by managing the equation: $\text{Costs Accumulated} = \text{Costs Distributed}$	<p>The data architecture must provide classifications to capture cost data to support managerial cost accounting. This function must link to budget execution and financial accounting functions to ensure proper control over cost information.</p> <p>The chart of accounts must have codes to provide control totals to maintain control over costs and to reconcile with other feeder systems that may be used to accumulate costs.</p>

Central Agency Financial Data Integrity Control Requirements - U.S. Government Standard General Ledger at the Transaction Level

Data stewardship within agencies ensures that data provided to central agencies are consistent with the requirements for governmentwide information and that such information is comparable with other agencies. One level of assurance is provided by applying the government standard general ledger at the transaction level. The primary purpose of the U.S. Government Standard General Ledger (SGL) (defined by the SGL Board and maintained by Treasury) is to standardize federal agency accounting, to support the external reports and financial statements required by OMB and Treasury, and to provide comparable information among agencies.

The SGL account numbers subdivide the basic equations to support the central agency information requirements and are required to be incorporated into the chart of accounts of each program agency. Each agency is required to maintain an agency level SGL as prescribed by the central agencies. The basic types of accounts are:

- **Budgetary accounts** used to track the effects of financial events on the sources and uses of budgetary resources, commonly referred to as budget execution. Financial events reflecting budgetary activity are recorded using double entry control in which transaction debits and credits are balanced consistent with the basic budgetary equation ($\text{Net Resources} = \text{Status of Resources}$).
- **Proprietary accounts** used to track the balances of assets, liabilities, net position, revenues, and expenses. Financial events affecting these balances are recorded using double entry control in which transaction debits and credits are balanced consistent with the basic accounting equation ($\text{Assets} = \text{Liabilities} + \text{Net Position}$).
- **Memorandum accounts** used to track additional financial details not covered by budgetary or proprietary accounts.

More detailed accounts may be required by a program agency and should be consistent with the conceptual framework prescribed in the SGL. Specifically, detailed accounts may be used to support information requirements associated with other financial activities that provide management information beyond supporting basic financial data integrity controls. Information must be accessible from an agency's general ledger using the SGL accounts. Detailed information maintained in systems other than the agency's general ledger, must, at a minimum, be accessible based on the SGL classification with assurance that the summarized data are maintained in the general ledger.

Use of the SGL and other standard data definitions improves data stewardship throughout the government, enabling consistent analysis and reporting at all levels within the agencies and at the governmentwide level. This concept is critical to supporting the integration of program execution

processes and to development of an information architecture that meets the needs of all users.

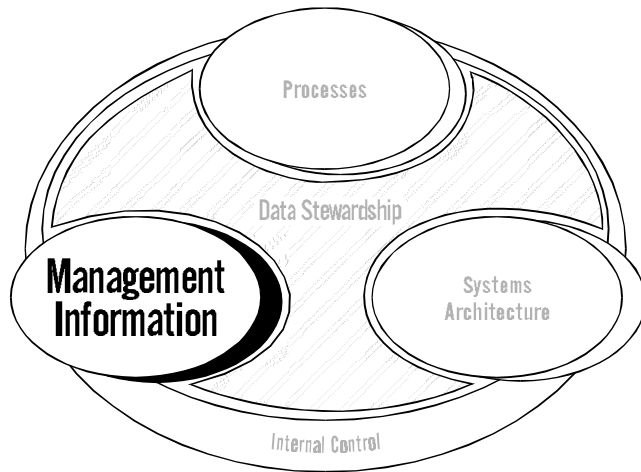
Assuring Data Integrity

Agencies must provide assurance that data collected and reported is accurate and follows government policies. One level of assurance of the accuracy and integrity of data is provided by the attainment of an unqualified opinion on the audited annual financial statements and internal controls. Unqualified opinions on annual financial statements and internal controls do not necessarily mean that daily and monthly operating reports are of high quality or support operating managers' needs. The integrity of budget execution data, cost data, performance measures, and data that is immaterial or not within the scope of a financial statement audit for other reasons, must also be assured.

Therefore, program agencies must provide further internal assurance over the quality, integrity, and usability of data at all levels. Such assurances can be provided through good procedures to ensure that data are accurately recorded and processed through the financial management systems, periodic reviews are conducted to ensure procedures are being followed, and procedures are continually being improved. Good procedures must include not only the work tasks and application systems supporting the work tasks but also training of personnel, participation of users at all levels in developing and implementing changes to processes, and timely assistance when environmental changes require adjustments to processes.

Factors to be considered in managing financial management system data include the data storage medium used, the degree of data distribution, and security requirements. Financial management system data that are considered to be federal government records must be managed in accordance with procedures pursuant to the Federal Records Act. The move to client/server and distributed computing is increasing complexity in data retention and management practices. Data maintained at distributed locations need to be controlled to ensure consistency with data maintained in other parts of the system.

V. Management Information for Program Execution



Program execution requires accurate management information based on an information architecture that captures and classifies data for financial reporting and performance measurement. Data are captured at the event level and summarized for information and reporting purposes. Transactions track individual financial events which occur in the course of conducting the affairs of the government. Summary data facilitate the collection and reporting of meaningful management information on the activities of the government for control purposes and to provide a view of how well the government is fulfilling its programmatic and stewardship responsibilities.

Information Architecture

The information architecture requires both event level and reporting level architectures; Illustration V-1 depicts these architectures. Within these architectures, transaction data are captured and information is classified according to various structures that management establishes in order to report financial information, monitor operations, and measure program activity. To be meaningful, values assigned to certain types of data (e.g., SGL accounts, object classes, Federal Account Symbols and Titles) are standardized on a governmentwide basis, while other types of data are standardized at other levels, such as department, bureau, and/or customer.

Government policy is to have standard data classifications for recording financial events and maintaining summary level information, whenever possible. Current standards must evolve into a comprehensive set of standards to assure data integrity of governmentwide information. An agency's standard data classifications must incorporate governmentwide information standards. In addition, data required for other purposes must be consistent with the governmentwide standards.

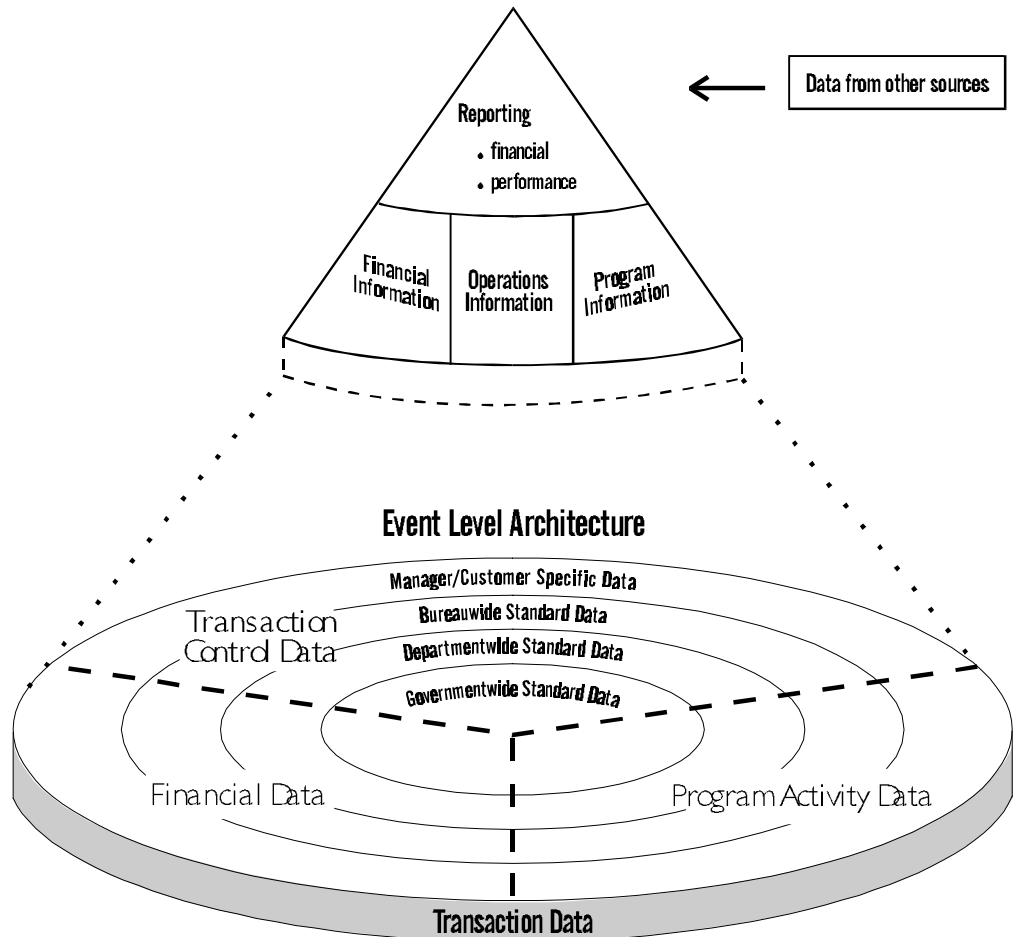
Data standards may occur at either the event level or the reporting level of the information architecture. In either case, data classifications need to use consistent definitions throughout the financial event collection and reporting processes. Data element names, definitions, formats, domains, uses, and attributes should be specified in establishing data requirements used by financial management systems.

In the federal government, OMB and Treasury identify issues of continuing importance that must be addressed by program agency financial systems through the issuance of policy statements and reporting requirements. These issuances often provide guidance on the level of detail, frequency, and data consolidation necessary for financial management systems. Building on these requirements, program agencies must incorporate necessary information requirements into their financial management systems.

Illustration V-1

Program Execution Information Architecture

Reporting Level Architecture



Event Level Architecture

Proper classification of financial events is critical to the entire management information process. Events occur routinely as a result of the business activity of the government. A financial event is any occurrence having financial consequences to the federal government related to the receipt of appropriations or other financial resources; acquisition of goods or services; payments or collections; recognition of guarantees, benefits to be provided, or other potential liabilities; or other reportable financial activity. These events are recorded in financial management systems as "transactions."

The event level architecture provides for the proper classification of data at the point of original entry to support all the elements of the reporting level architecture. The event level architecture also provides for appropriate transaction identification and control, eliminates the need for redundant data collection processes for multiple reporting level architecture requirements, and supports the collection of complete transaction data when a financial event occurs.

The event level architecture is used to capture and record transaction data on individual financial events. Transaction data provide the critical link between program delivery and financial event processing, and provide the basis for information necessary for program managers, senior agency executives, and Congress to carry out their responsibilities to government customers and the public. Transaction data about an individual financial event includes (i) transaction control data for tracking the event, (ii) financial data for classifying the type of financial activity, and (iii) program activity data for capturing related non-financial characteristics.

Reporting Level Architecture

Effective program execution requires providing information to customers about their interactions with the federal government, to agency managers for operating decision-making, to senior administration officials for policy decision-making, and to the Congress to understand the status of government programs. The reporting level architecture is the structure of data and its presentation to meet these information requirements. Reporting needs to be of proper scope, level of detail, timing, content, and presentation format to provide information of real value to users. Timely, concise, and conclusive information should be provided since managers have limited time to access and digest information.

The reporting level architecture is used to summarize transaction data and provide the financial, operations, and program information necessary for internal and external reporting. Examples of financial information, which includes budget information, are funds appropriated, obligations, tax revenue received, and resources invested in real property. Examples of operations information are full-time equivalent (FTE) information, aging of accounts receivables, prompt pay statistics, and timely payment of travel reimbursement. Examples of program information are types of beneficiaries, loans issued, and property purchased.

The reporting component of the reporting level architecture provides for the presentation of financial and performance information. It provides users access to understandable information about what the government is doing and how well it is doing it. Financial reporting provides information on the financial condition of the federal government at a point in time or over a period of time. Performance reporting answers the question: "How effective and efficient are operations and programs?" Performance reporting may use data from sources other than the financial management systems (e.g.,

economic indicators, crime rates) to measure how well a program is doing. Illustration V-2 provides sample information requirements of key users of government financial information.

Illustration V-2

Requirements of Representative Information Users

Information Users	Sample Requirements
Public	—Audited financial statements and information used for economic analysis.
Congress	—Information which provides accountability to oversight committees, such as audited financial statements and information on debt collection activities —Information on program costs and obligations.
OMB	—Information supporting the formulation and execution of the budget. —Audited financial statements for monitoring, resource allocation, and assurance of internal control adequacy. —Information on outlays and receipts used to estimate the deficit.
Treasury	—Information on deficit financing. —Monthly information tying outlay and receipt information to fund account symbols of agencies. —Annual information to produce a consolidated financial statement which summarizes the financial position of the federal government.
Program Agencies	—Information for senior program managers and senior financial managers to monitor program activity. —Information which allows program managers to meet their responsibilities to control the program within funding limits. —Other information for program managers, which may transcend funding, which allows them to measure and manage the results of program execution. —Operation oriented data for financial managers which provides them with information on the quality of data maintained in the system, the quality and timeliness of system processes, and problems related to the general stewardship of funds and other assets. —Information for department Executive Information Systems (EIS) which include financial information from many bureaus, as well as other broad managerial and program information.
Government Customers	—Information on the status of accounts with the government such as outstanding loan balances or undrawn grant balances.

Structures Supporting the Information Architecture

The information architecture is supported by a series of structures that organize the data contained in the event level architecture and the reporting level architecture such that meaningful and useful information can be obtained. These structures are depicted in Illustration V-3. The various structures work together in a cohesive architecture to enable accurate, internally consistent and meaningful data to be collected and reported on financial events.

The financial and related information classification structures (shown inside the dotted lines) provide the ability to collect and summarize information consistently and at the appropriate levels of detail for users at multiple levels within the government. These structures consist of information classification structures to collect information on (i) the financial status of government operations and the use of financial resources (financial information), (ii) the efficiency of operations (operations information), (iii) the effectiveness of delivery (program information), and (iv) individual financial events (transaction). Collectively, this information is used to support financial and performance reporting requirements. The reporting structure provides the necessary access to information captured by the financial management systems using the financial and related information classification structures.

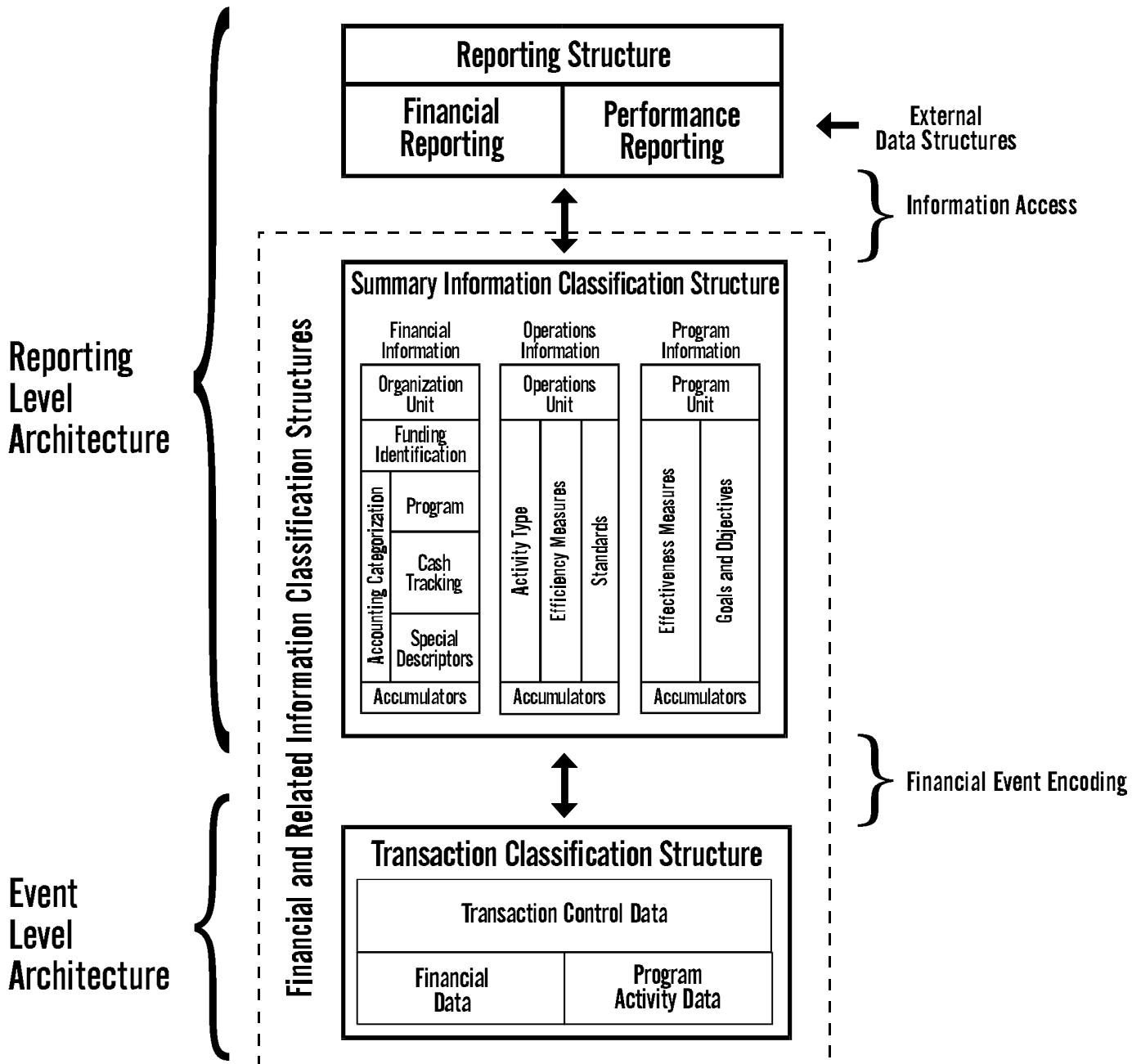
Standardized and consistently defined data elements in the transaction classification structure linked together by appropriate encoding relationships with the summary information classification structure provide the bridge between the event level data requirements and the summary level information requirements. The summary information classification structure, supporting the summary level information requirements, assembles the data into meaningful categories which can be made accessible for a variety of reporting purposes. Financial and performance reporting is based on the summary information classification structure, but also may require data contained in data structures external to the financial management systems to be used to make the information meaningful, complete, and useful for decision-making. The transaction classification structure of the event level architecture and the summary information classification structure and reporting structure of the reporting level architecture work together to provide the necessary description of financial events to ensure the integrity of financial and related information collected and reported.

Transaction Classification Structure

The data elements to properly track and classify a financial event are contained in the transaction classification structure, and are categorized as financial data, program activity data, and transaction control data. The transaction classification structure is used to track individual transactions and relate them to financial events. The elements of financial data (e.g., fund, object class, dollar amount) and program activity data (e.g., activity type, program unit) within the transaction classification structure provide the

Illustration V-3

Structures Supporting the Information Architecture



minimum data needed to derive the full classification of information for financial information, operations information, and program information. Transaction control data within the transaction classification structure provide the audit trail for financial events and may also be used to assess performance. Transaction control data include such elements as transaction source, document/reference number, transaction ID or control number, transaction type, effective date, and posting date. This structure provides for the coding necessary to collect data to support the summary information classification structure.

Summary Information Classification Structure

The summary information classification structure consists of three separate but related classification structures, i.e., financial information, operations information, and program information classification structures. These three classification structures are used to categorize summary level financial, operations, and program information necessary for users to understand the financial implications of decisions made and to track performance of operations and programs. These structures provide the rules for organizing information, which facilitate financial and performance reporting.

Financial Information Classification Structure

The financial information classification structure is used for collecting, categorizing, tracking, monitoring, and reporting information on the status of financial resources at federal agencies. It provides the structure for collecting budget and financial information for reporting, assuring financial accountability, and linking budget formulation and budget execution. The essential categories of the financial information classification structure are organization unit, funding identification, accounting categorization, program, cash tracking, special descriptors, and accumulators. Data classified in these categories are necessary to support the program execution processes described in Chapter III.

Definitions of each of the categories in the financial information classification structure and illustrative example data elements that may be included in each category are provided below. The data elements in the illustrative examples have been correlated with the financial accountability functions (budget execution, financial accounting, cash management, cost management) that they support. These illustrative examples of data elements are not meant to be an exhaustive or complete listing.

- **Organization Unit** is the level at which financial information is consolidated and reported within an agency or externally to central agencies. An organization unit may also represent a level at which financial information is further consolidated by central agencies after it is reported by program agencies.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Reporting Entity	X	X		X
Agency	X	X	X	X
Bureau	X	X	X	X
Agency Internal Organization	X	X		X

- **Funding Identification** is used to control the formulation and execution of the budget. These elements are usually assigned during the budget formulation process.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Account Symbol	X	X	X	
Fund Year	X	X	X	
Transferee Code	X	X	X	
Allotment/Suballotment		X	X	
Budget Activity	X	X		
Fund Code	X	X		
Budgetary Restriction	X			
Funded/Unfunded		X		

- **Accounting Categorization** elements are used to track the assets, liabilities, and equity of federal agencies and the sources and uses of funds. These elements also support processes for posting to proprietary, budgetary, and memorandum accounts and aggregating these accounts to meet reporting requirements.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
SGL Account Number	X	X	X	X
Revenue Source Code	X	X	X	
Object/Subobject Class	X	X		
Cash Flow Category		X	X	
Entity/Non-entity Indicator		X		
Federal/Non-Fed. Indicator		X		
Reporting Period	X	X	X	X

- **Program** elements to support aggregation of financial information related to specific activities or purposes.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Program Identifier	X			
Program Reference	X		X	
Cost/Activity/Project Code		X		X
Function/Subfunction Code	X			
Loan Cohort/Program	X	X		
Catalog of Federal Domestic Assistance Number	X			

- **Cash Tracking** elements are used to control the cash flow processes associated with payments and deposits at Treasury or other authorized depository arrangements.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Agency Location Code			X	
Disbursing Officer Symbol			X	
Treasury RFC Symbol			X	
Entity Code	X	X	X	

- **Special Descriptors** are additional descriptive elements at a level below those required for controlling or tracking funds that are used to further aggregate and describe data streams.

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Location/Country Code	X	X		
Commodity Code				X
Vendor/Customer Identification		X	X	

- **Accumulators (Financial)** are financial amounts and related information (e.g., units, labor hours) aggregated from financial events reflecting time periods (e.g., daily, monthly, prior year, current year), anticipated activity (e.g., budgets, obligations), or analytic scenarios (e.g., percentage reduction in spending, changing inflation factor).

Examples:	Budget Execution	Financial Accounting	Cash Management	Cost Accounting
Prior year amount	X	X	X	X
Current year amount	X	X	X	X
Future year amount	X	X	X	X

Operations Information Classification Structure

The operations information classification structure captures information on the activities of an operation. This type of information helps managers evaluate the efficiency of an operation. While data standards are less defined for this type of information than for financial information, consistency in the collection of this type of data is necessary to ensure that proper comparisons are made when benchmarking one operation to another.

The following are common types of information normally found when collecting operations information.

- **Operations Unit** is the identification of an operation to be monitored; this is normally determined within the agency, but may be presented to external agencies for operations that have particular management significance or interest.
- **Activity Type** identifies the type of activity to be measured within an operations unit to accurately diagnose problem areas or areas needing improvements in efficiency. Examples include payments, collections, and case processing.
- **Efficiency Measures** reflect the volume, frequency, or timing associated with an activity type.
- **Standards** set the targets for performance measurement. They define what management is attempting to achieve; for example, 95% of payments made on-time.
- **Accumulators (Operations)** track event occurrences according to the efficiency measures reflecting time periods (e.g., daily, monthly, prior year, current year) to support trend analysis. Examples for a payment activity include numbers and dollar amounts of late payments, early payments, and on-time payments.

Program Information Classification Structure

The program information classification structure categorizes information on program activity supporting program execution. This information is necessary to assist managers in determining whether a program is meeting its objectives and anticipating future program needs. While the status of data standards for this information is among the least defined, the data elements should, at a minimum, include the non-financial data necessary to support the Government Performance and Results Act of 1993.

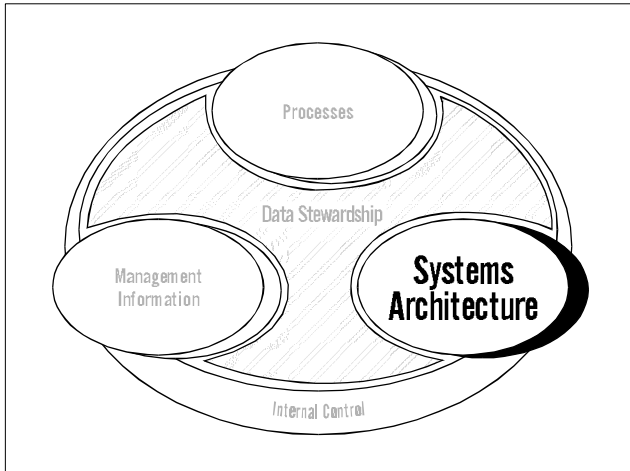
The following are common types of information normally found when collecting program information.

- **Program Unit** is the program level at which activity is to be measured. This may be a large program involving several agencies or a single agency, or smaller programs existing only within one organizational unit. However determined, it should be reconcilable to the entity classifications used to prepare audited financial statements.
- **Effectiveness Measures** reflect resources applied and the outputs and outcomes achieved by a program unit. An example is crime rate reduction resulting from an increased law enforcement expenditure.
- **Goals and Objectives** describe management's projected outputs, outcomes, and results. Program activities are presumed to cause certain outputs or outcomes to take place that can be measured in some way.
- **Accumulators (Program)** enable quantifiable measures used to determine the effectiveness of program activities.

Reporting Structure

The reporting structure of the information architecture provides access to the information captured by the financial management systems. The reporting structure supports requirements for reporting and providing information on (i) the financial status of government operations and the use of financial resources (financial reporting) and (ii) the effectiveness and efficiency of delivery (performance reporting). The reporting structure can facilitate analysis of financial, operations, and program information by identifying and reporting variances between actual results and plans. The reporting structure must allow for the incorporation of data from sources other than the financial management systems and must report information consistently and at the appropriate levels of detail for users, throughout the government, who need to understand financial implications of program activity. In addition, the reporting structure must be able to support reporting requirements of the CFO Act of 1990, the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and related implementing guidance.

VI. Systems Architecture for Program Execution



Federal information systems support all phases of the federal government's management cycle as described in Chapter II of this document. The systems architecture for program execution must provide for a set of financial, mixed, and non-financial systems working together in an integrated fashion to support the information and processing needs of all persons involved in program execution, both inside and outside of the federal government. Financial management systems, which encompass financial systems and the financial portions of mixed systems, are an integral part of the larger federal information systems architecture supporting program and financial management activities.

Financial Management Systems Architecture

The financial management systems architecture is the blueprint for the logical combination of financial and mixed systems to provide governmentwide and agency budgetary/financial management support for program and financial managers. The federal government's financial management systems architecture consists of systems that can be categorized into those systems which provide governmentwide support and those systems that are specifically directed at supporting a particular program agency.

Governmentwide financial management systems are established by central agencies (or designated lead program agencies) to collect and maintain financial and related performance measurement data provided by the program agencies or by centralized processing units. These systems are used for asset/liability management, budget execution analysis, financial statement preparation, budget formulation and presentation, and to process/track the flow of cash payments and deposits on a governmentwide basis. Systems recognized by the central agencies and classified as governmentwide include the central financial information systems, the central budget formulation systems, the central cash processing systems, and shared systems available to two or more agencies for purposes of processing transactions and/or collecting information which must be shared by multiple agencies.

Agency systems include those financial management systems that support the mission of an agency. Agencies provide the logical combination of financial management systems, including shared systems, to support the agencies' missions. Shared systems are used by agencies where they must have information/data definitions common to all users to support particular functions effectively and efficiently. Examples of these systems include those operated by central agencies and systems operated by a particular program agency for the entire government. Certain agency systems may also be cross-serviced to achieve effectiveness and efficiency gains through

consolidation of systems support either between departments or within a department. Examples of agency systems include core financial systems, other agency financial and mixed systems, shared systems, and departmental executive information systems.

Departmental executive information systems are used to provide information on activities of the department or agency as a whole. These are typically mixed systems that contain both financial and non-financial data. Information contained in these systems is used by top-level management for decision-making and monitoring of agency activities, and should also be accessible by other managers for their use and review.

The financial management systems architecture consists of four major components: central financial information systems, central budget formulation systems, central cash processing systems, and agency financial management systems. Illustration VI-1 provides an overview of how these components link together to support federal reporting and decision-making needs. The major system types in each of the major components of the systems architecture are described in the following sections.

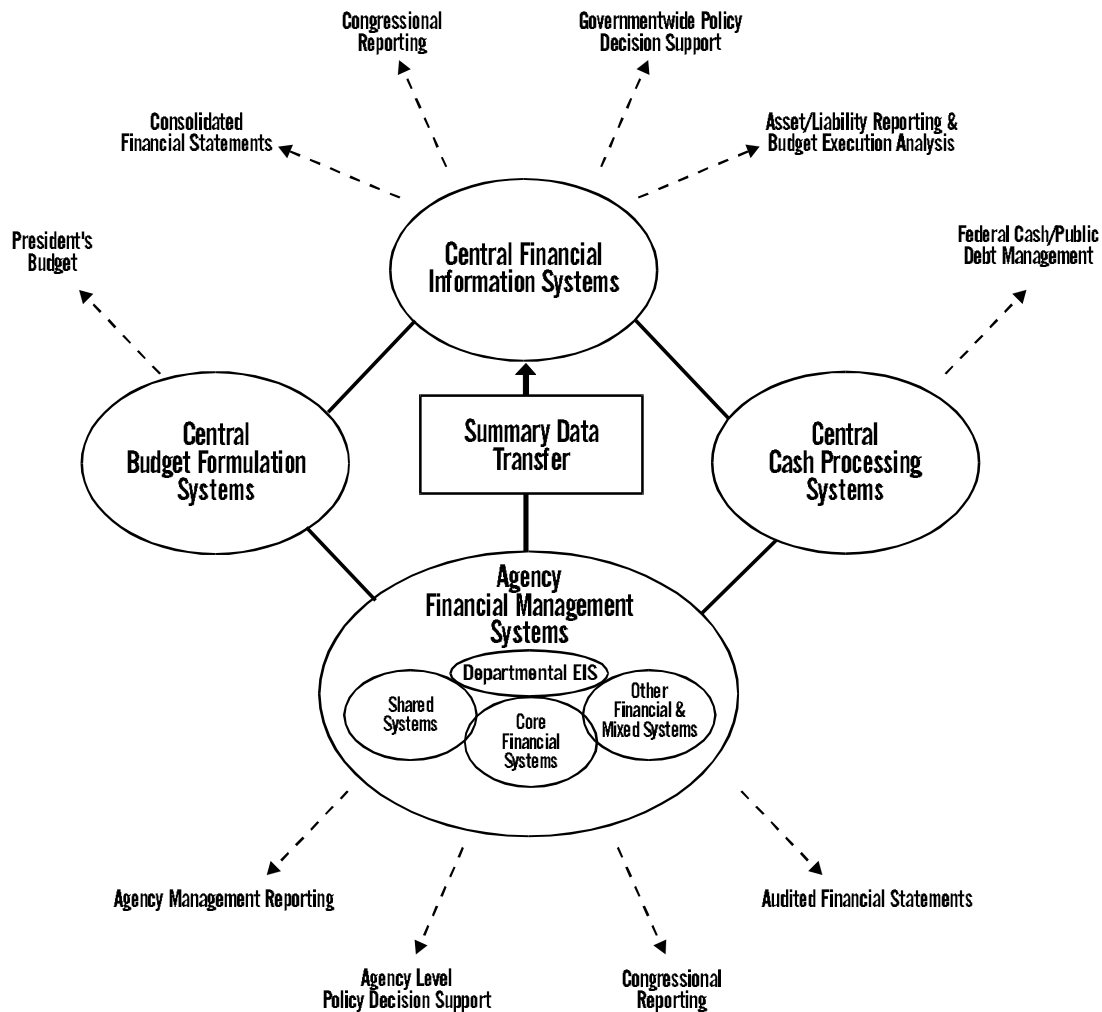
Central Financial Information Systems

Central financial information systems collect and maintain financial and related performance measurement data needed for governmentwide asset/liability reporting and analysis, budget execution analysis, production of the consolidated financial statements, program monitoring, and governmentwide decision-making support. The central financial information systems must integrate information on the financial position of federal agencies (on the accrual basis) with information on the sources and uses of budgetary resources. Central financial information is provided by agencies monthly, quarterly, or annually, at the summary level, from their financial systems. Agency systems retain the transaction level detail which supports the central financial information. Other financial information which impacts appropriation and fund balances contained in the central cash processing systems is reflected in the central financial information systems.

Central financial information systems also provide information to other federal financial systems. The central budget formulation systems receive information on the status of appropriations and funds which serves as the basis for prior year financial information, or "actuals," in the budget formulation process. Information is also provided to the agencies on the status of funds and differences between the central financial information systems and the agency financial management systems.

Illustration VI-1

Financial Management Systems Architecture



Central Budget Formulation Systems

Central budget formulation systems perform processes necessary for the preparation, formulation, and presentation of the President's Budget and tracking it through enactment of appropriations by Congress. Budget requests and other supporting information from agency financial management systems are provided to the central budget formulation systems. Once appropriations are approved by Congress, information is passed to the central financial information systems for budget execution and is incorporated in the agency financial management systems.

Central Cash Processing Systems

Central cash processing systems process and track the flow of cash payments and deposits of the federal government for purposes of federal cash/public debt management and reporting. These systems must be linked electronically to the agency financial management systems. The central cash processing systems also include the results of financial activity performed by the central agencies on behalf of the federal government, such as information on managing the public debt. The results of processing in these systems is summarized and included in the central financial information systems. Central and agency financial management information should be reconciled periodically.

The central cash processing systems include the following types:

- **Public Debt System** - Supports the issuance and management of government securities issued to the public.
- **Payment System** - Includes the processing of payments by check or electronic means and any subsequent claims by payees for missing payments, as well as information needed for reconciling these activities with the central financial information systems and agency financial management systems.
- **Deposit System** - Includes information on collections and deposits on behalf of the federal government.
- **Cash Management System** - Supports the analysis of agency collections, deposit activity, disbursements, investments, and foreign currency to support financing and long-range cash forecasting.

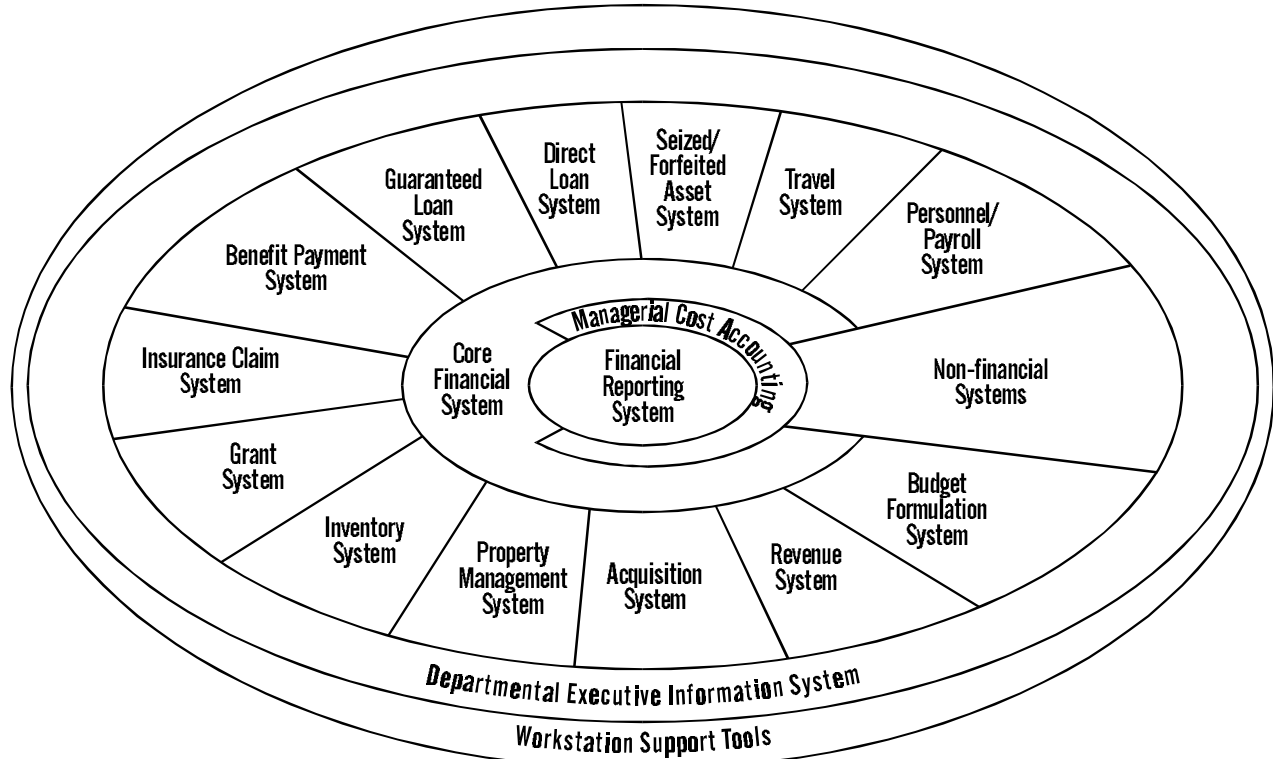
Agency Financial Management Systems Architecture

Agency financial management systems track financial events and summarize information to support the mission of an agency, provide for adequate management reporting, support agency level policy decisions necessary to carry out fiduciary responsibilities, and support the preparation of auditable financial statements. Agency financial management systems fall into four categories: core financial systems, other financial and mixed systems, shared systems, and departmental executive information systems (systems to provide management information to all levels of managers). These systems must be linked together electronically to be effective and efficient. Summary data transfers must be provided from agency systems to central systems to permit summaries of management information and agency financial performance information on a governmentwide basis.

Each agency must develop its own systems architecture consistent with governmentwide standards and requirements. The agency systems architecture shown in Illustration VI-2 provides a logical perspective identifying the relationships of various agency system types. Although this does not necessarily represent the physical design of the system, it does identify the system types needed to support program delivery/financing and financial event processing for effective and efficient program execution.

Illustration VI-2

Agency Systems Architecture



The following financial management system types are components of a *single, integrated financial management system*. Some types are not applicable to all agencies because their missions and programs do not require system support of that type.

- Core Financial System** - Forms the backbone for the agency's integrated financial management system. It provides common processing routines, supports common data for critical financial management functions affecting the entire agency, and maintains the required financial data integrity control over financial transactions,

resource balances, and other financial systems. The core financial system supports general ledger management, funds management, payment management, receipt management, and cost management. The system receives data from other financial systems and from direct user input, and it provides data for financial performance measurement and analysis and for financial statement preparation.

- **Personnel/Payroll System** - Supports the agency's management of human resources. It maintains data on employees and positions, supports personnel actions and decisions, captures time and attendance information, and performs leave and payroll computations (including retirement contributions).
- **Travel System** - Supports the agency's management of travel and transportation activities and expenses. It prepares and tracks the status of travel orders, advances, and vouchers as they go through the various stages of preparation, approval, and processing.
- **Seized/Forfeited Asset System** - Supports the management of property or other assets seized and/or forfeited to the federal government by federal law enforcement agencies. It tracks the status of a seized asset from the time of seizure, through various processing steps, which may include forfeiture, until final disposition of the asset.
- **Direct Loan System** - Supports the management of direct loan programs in which direct disbursements are made to an approved borrower and the agency services and collects the loan. It supports the functions of loan extension, account servicing, portfolio management, and delinquent debt collection.
- **Guaranteed Loan System** - Supports the management of guaranteed loan programs, which use private sector lenders to originate and service loans, with all or a portion of the interest and loan repayment guaranteed by the federal government in case of borrower default. It supports the functions of lender management, guarantee extension and maintenance, portfolio management, acquired loan servicing, and delinquent debt collection.
- **Benefit Payment System** - Supports payments of social insurance benefits and other transfer payments.
- **Insurance Claim System** - Supports payments of insurance claims under deposit insurance, pension benefit guarantees, crop insurance, and other programs in which the government provides protection against specified risks.
- **Grant System** - Supports providing grants and subsidies made to state and local governments, other organizations, or individuals.
- **Inventory System** - Supports the management of inventory held for sale or used in the production of goods and services for sale. It supports

the functions of needs determination, inventory in storage, inventory in production, inventory disposition, and program planning and monitoring.

- **Property Management System** - Supports physical and accounting control over fixed and movable assets of the federal government.
 - **Acquisition System** - Supports the acquisition process of obtaining goods and services. It prepares and tracks the status of requisitions, small purchase orders, and contracts; records and validates the receipt of goods and services; and provides information to the core financial system for matching invoices and issuing payments.
 - **Revenue System** - Supports the billing, collection, and detailed reporting of taxes, fees, and other revenues of the federal government.
 - **Budget Formulation System** - Supports the agency's preparation of budget information during the budget formulation process. It supports the establishment of a baseline from which to build the budget, tracks initial submissions and modifications to the budget, provides budget data for inclusion in the President's Budget, and tracks the status of the budget request as it moves through the process until enactment of appropriations.
 - **Managerial Cost Accounting System** - Supports the appropriate collection, measurement, accumulation, analysis, interpretation, and communication of cost information. This information should be provided in such a way that it helps the user determine the cost of providing specific programs and activities and the composition of, and changes in, these costs.
 - **Financial Reporting System** - Supports the accumulation and reporting of financial and related information in accordance with requirements of OMB's Bulletin on "Form and Content of Financial Statements." The system provides information for the annual and other periodic reporting of summary financial and related information including audit trails to systems of original entry and adjustments.
 - **Departmental Executive Information System (EIS)** - Supports the collection and retrieval of current and historical financial, program, and related performance data for analysis, decision-making, and performance reporting by managers at all levels.
 - **Non-Financial Systems** - Support processes and data necessary to carry out programs not involving financial events.
 - **Workstation Support Tools** - Provide general purpose support of employees' activities such as word processing, spreadsheets, and electronic mail.
-

Relationships Between Agency Financial Management Systems and Program Execution Functions

Illustration VI-3 shows how the agency financial management systems support the financial event processing and program delivery/financing mechanisms to form the *single, integrated financial management system*. Blocks marked with a “P” indicate that the system on the left side of the illustration supports processing for the program execution function at the top. Blocks marked with a “D” indicate that the system provides data needed by the program execution function, but does not perform significant processing in support of the function. For example, the loan systems process loans and collections and provide data for the financial accountability functions and payables/disbursements.

Integration of Financial Management Systems

The financial management systems architecture for program execution requires agency financial and mixed systems to work together with governmentwide systems to ensure that transactions are recorded consistently and with predictable results. To be integrated, financial management systems must have the following physical characteristics:

- **Common Data Elements** - Standard data classifications (definitions and formats) shall be established and used for recording financial events and common data elements to meet reporting requirements and, to the extent possible, used throughout the agency for collection, storage, and retrieval of financial information. Governmentwide information standards (such as the U.S. Government Standard General Ledger) and other external reporting requirements shall be incorporated into the agency’s standard data classification requirements.
- **Common Transaction Processing** - Common processes shall be used for processing similar kinds of transactions throughout the system to enable these transactions to be reported in a consistent manner.
- **Consistent Internal Controls** - Internal controls over data entry, transaction processing, and reporting shall be applied consistently throughout the system to ensure the validity of information and protection of federal government resources.
- **Efficient Transaction Entry** - Financial system designs shall eliminate unnecessary duplication of transaction entry. Wherever appropriate, data needed by the system to support the financial function shall be entered only once. Other parts of the system shall be updated through electronic means consistent with the timing requirements of normal business/transaction cycles.

Illustration VI-3

Agency System Relationships to Program Execution Functions (Representative Examples)

System	Program Delivery/Financing												Financial Event Processing											
	Federal Assistance				Government Ops				Financing				Financial Accountability						Transaction Tracking					
	Transfer Payments	Grants and Subsidies	Loans	Insurance	Personnel	Acquisition	Property Management	Inventory Management	Taxation	Fee and Other Revenue Generation	Public Debt	Deposit Funds	Intragovernmental Collections	Budget Formulation	Budget Execution	Financial Accounting	Cash Management	Cost Accounting	Receivables/Collections	Payables/Disbursements	Payroll	Travel	Property Accounting	Inventory Accounting
Core Financial System	D	D	D	D	D	D	D	D	D	D		P	P	D	P	P	P	P	P	P				
Personnel/Payroll System					P										D	D		D		P	P			
Travel System					D										D	D		D	D	D		P		
Seized/Forfeited Asset System							P									D		D	D	D				P
Direct Loan System			P												D	D	D	D	P	D				
Guaranteed Loan System			P												D	D	D	D	P	D				
Benefit Payments System	P														D	D		D		P				
Insurance Claims System				P												D		D		D				
Grants System		P													D	D		D		D				
Inventory System						D	P	P								D		D	D				P	P
Property Management System			D				P									D		D				P		
Acquisition System						P	D	D							D	D		D		D			D	D
Revenue System									P	P						D		D	P	D				
Budget Formulation System														P	D									
Managerial Cost Accounting System																D		P						D
Financial Statement Prep System																P								
Departmental EIS	D	D	D	D	D	D	D	D	D	D		D	D	D	D	D	D	D	D	D	D	D	D	D

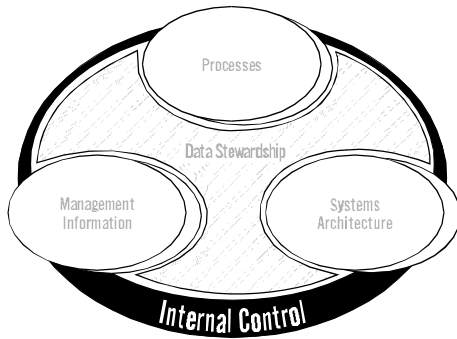
D Function requires access to data maintained by the system

P System supports function processing

Integration means that the user is able to have one view into the systems such that, at whatever level the individual is using the system, he or she can get to the information needed efficiently and effectively through electronic means. However, it does not mean that all information is physically located in the same database. Interfaces, where one system feeds data to another system following normal business/transaction cycles, such as salary payroll charges recorded in general ledger control accounts at the time the payroll payments are made, may be acceptable as long as the supporting detail is maintained and accessible to managers. In such cases, interface linkages must be electronic unless the number of transactions is so small that it is not cost-beneficial to automate the interface. Easy reconciliations between systems, where interface linkages are appropriate, must be maintained to assure accuracy of the data.

Subject to governmentwide policies, the physical configuration of financial management systems, including issues of centralized or decentralized activities, processing routines, data, and organizations, is best left to the determination of the agency, which can determine the optimal manner in which to support the agency mission. The physical design of the system, however, should consider the agency's organizational philosophy, the technical capabilities available, and the most appropriate manner to achieve the necessary single, integrated financial management system for the agency.

VII. Internal Control



Internal control is an integral part of the federal government's basic management processes. Internal control promotes efficiency, reduces risk of asset loss, and helps ensure the reliability of financial statements and compliance with laws and regulations.

The concept of internal control should be considered within the broader context of management control. Management controls are the organization, policies, and procedures used by agencies to reasonably ensure that (i) programs achieve their intended results; (ii) resources are used consistent with agency mission; (iii) programs and resources are protected from waste, fraud and mismanagement; (iv) laws and regulations are followed; and (v) reliable data are obtained, maintained, reported, and used for decision making. Many decisions and actions by management are not considered a part of internal control. For example, establishment of objectives, while an important management responsibility, is not internal control but is a precondition to internal control.

It is essential that federal financial management systems contain a sufficient number of appropriate, cost-effective controls to safeguard assets, ensure accurate aggregation and reporting of information, and support the accomplishment of organizational objectives. These controls need to be built into systems design and periodically checked for effectiveness and relevancy. Control effectiveness can be weakened by changes in programs or activities and by employee neglect. Management must balance safeguards necessary to ensure the integrity of operations and data with the need to make accessible, timely, and accurate data available to managers and others needing financial information.

Internal control procedures must support an organization's ability to prepare financial statements that are fairly presented in conformity with generally accepted or other relevant and appropriate accounting principles and regulatory requirements. Underlying an entity's financial statements is a series of assertions that include: (i) existence or occurrence, (ii) completeness, (iii) rights and obligations, (iv) valuation or allocation, and (v) presentation and disclosure. Verification of these assertions is a key part of financial statement audits.

Definition of Internal Control

In *Internal Control—Integrated Framework*, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) broadly defined internal control as a process, effected by the management and other personnel of an entity, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- **Operations objectives**, which pertain to effectiveness and efficiency of operations and programs, including performance and safeguarding resources against loss,
- **Financial reporting objectives**, which pertain to the reliability of information and financial reporting including the preparation of financial statements, and
- **Compliance objectives**, which pertain to adherence to provisions of applicable laws and regulations, including budget objectives to assure that obligations are incurred and transactions are executed in accordance with budget authority and apportionments.

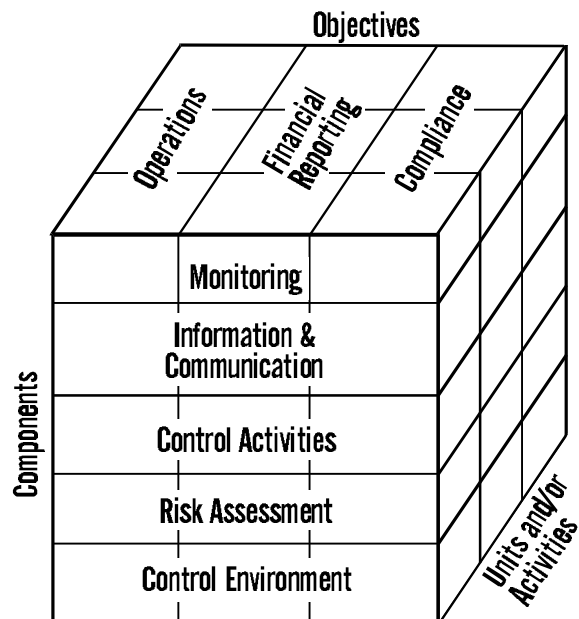
Within these three categories, objectives for safeguarding of assets and other resources fall primarily into the category of operations objectives, but certain aspects of them may fall under the categories of financial reporting and compliance. Internal controls to safeguard assets against unauthorized acquisition, use, or disposition help ensure that access to and use of assets are in accordance with management's authorization, as well as with established policies and procedures.

Internal Control Components

COSO's *Internal Control—Integrated Framework* identifies five interrelated components of internal control: control environment, risk assessment, control activities, information and communication, and monitoring. These components form an integrated system that reacts dynamically to changing conditions. Each of these components is relevant to operations, financial reporting, and compliance objectives. Internal control is applied to an entire entity or to any of its units or activities. Illustration VII-1 presents the relationships of internal control objectives and components as discussed by COSO.

Illustration VII-1

Relationship of Internal Control Objectives and Components



Source: Adapted from *Internal Control—Integrated Framework*

All five components must be present and functioning effectively for one to conclude that internal control is effective. Internal control is most effective when controls are built into the entity's infrastructure. These built-in controls support quality and empowerment initiatives, avoid unnecessary costs, and enable quick response to changing conditions.

The following summary descriptions of the five components of internal control are taken from COSO's *Framework*.

Control Environment

The control environment sets the tone of an organization, influencing the control consciousness of its people. It is the foundation for all other components of internal control, providing discipline and structure. Control environment factors include the integrity, ethical values, and competence of the entity's people; management's philosophy and operating style; the way

management assigns authority and responsibility and organizes and develops its people; and the attention and direction provided by oversight organizations.

The control environment has a pervasive influence on the way activities are structured, objectives established, and risks assessed. It also influences control activities, information and communications systems, and monitoring activities. Effectively controlled entities strive to have competent people, instill an entity-wide attitude of integrity and control consciousness, and set a positive “tone at the top.” Systems design reflects management’s attitudes toward data processing and accounting functions and related personnel.

Risk Assessment

Every entity faces a variety of risks in achieving its objectives. Risk assessment is the identification and analysis of relevant risks to achievement of the objectives of the entity, forming a basis for determining how the risks should be managed. Because economic, industry, regulatory, and operating conditions will continue to change, mechanisms are needed to identify and deal with the special risks associated with change. Management must determine how much risk is to be prudently accepted and strive to maintain risks within these levels.

Objective setting is a precondition to risk assessment. There must first be objectives before management can identify risks to their achievement and take the necessary actions to manage the risks. While objective setting is not an internal control component, it is a prerequisite to and enabler of internal control.

The types of controls built into a system should be commensurate with the significance of risks, the likelihood or frequency of risks occurring, and management’s assessment of what actions need to be taken to manage risks. The choice of internal controls from among those available is based on a number of risk factors including, but not limited to, (i) the inherent nature of the information, (ii) the possible consequences of incorrect information, (iii) the needed degree of reliability of the information, (iv) the cost effectiveness of using a particular control and the relative effectiveness and efficiency of alternative controls, and (v) the vulnerability of assets to loss or misuse.

Control Activities

Control activities are the policies and procedures that help ensure management directives are carried out. They help ensure that necessary actions are taken to address risks to achievement of the entity’s objectives. Control activities occur throughout the organization, at all levels, and in all functions.

Control activities have been described as various types, including preventive controls, detective controls, manual controls, computer controls and management controls. Control activities are as diverse as approvals, authorizations, verifications, reconciliations, reviews of operating performance, security of assets, and segregation of duties. Such procedures are performed every day in agencies that serve to enforce adherence to established action plans and to keep entities on track toward achieving their objectives.

With widespread reliance on information systems, controls are needed over financial management systems to support operations, financial reporting, and compliance objectives. Two broad groupings of information systems control activities can be used. The first category is general controls, which apply to all financial management systems and help ensure their continued, proper operation. The second category is application controls, which include computerized capabilities within the application software and related manual procedures to control the processing of various types of transactions. Together, these controls serve to ensure completeness, accuracy, and validity of the financial and other information in the system.

General controls commonly include controls over data center operations, system software acquisition and maintenance, access security, and application system development and maintenance. These controls apply to all systems — mainframe, client/server, and end-user computing environments. Types of general controls include:

- **Data center operations controls**, which include job set-up and scheduling, operator actions, backup and recovery procedures, and contingency or disaster recovery planning.
- **System software controls**, which include controls over the effective acquisition, implementation and maintenance of system software — the operating system, data base management systems, telecommunications software, security software, and utilities — which run the system and allow applications to function.
- **Access security controls**, which protect the system, including prevention of unauthorized access to data, whether by entity employees or others; physical protection of assets (including building, rooms, machines, magnetic media) from all unauthorized persons; recording and review of all attempts at unauthorized access; and prevention of disclosure of critical data during communications.
- **Application system development and maintenance controls**, which provide the control structure for developing systems and appropriate control over changes to systems.

Application controls are designed to control application processing and help to ensure the completeness and accuracy of transaction processing, authorization, and validity. Types of application controls include:

- **Authorization controls**, which are designed to provide reasonable assurance that (i) transactions, (ii) events from which they arise, and (iii) procedures under which they are processed are authorized in accordance with laws, regulation, and management policy.
- **Approval controls**, which are designed to provide reasonable assurance that appropriate individuals approve recorded transactions in accordance with management's general or specific criteria.
- **Segregation of duties controls**, which are designed to reduce the opportunity for someone to perpetrate or conceal errors or irregularities in the normal course of duties.
- **Controls on the design and use of documents and records**, which are designed to help provide reasonable assurance that transactions and events are properly documented, recorded, and auditable.
- **Adequate safeguards over access to and use of assets and records**, which are designed to protect assets and records against physical harm, theft, loss, misuse, or unauthorized alteration. These controls restrict unauthorized access to assets and records and segregate the duties of those with authorized access to assets and records.
- **Independent checks controls**, which are designed to provide independent assurance on the validity, accuracy, and completeness of processed data, including statistical sampling and post-event management reviews.

One of the most significant contributions computers make to control is their ability to prevent errors from entering the system, as well as detecting and correcting them once they are present. To do this, many application controls depend on computerized edit checks. These consist of format, existence, reasonableness, and other checks on the data which are built into each application during its development.

Information and Communication

Pertinent information must be identified, captured and communicated in a form and timeframe that enables people to carry out their responsibilities. Information systems produce reports containing operational, financial, and compliance related information that makes it possible to run and control the entity. They deal not only with internally generated data, but also information about external events, activities, and conditions necessary for informed decision making and external reporting.

Every entity must capture pertinent information, both financial and non-financial, relating to external as well as internal events and activities. This information must be identified by management and delivered to the people who need it so that they can carry out their control responsibilities. The quality of system-generated information affects management's ability to make

appropriate decisions in managing and controlling the entity's activities. Quality of information includes ascertaining whether content is appropriate, timely, current, accurate, and accessible. Quality of information requires controls over recognition and measurement of recorded amounts, summarization of accounting and budgetary data, rights and obligations of the entity, and presentation and disclosure of information.

Monitoring

Monitoring ensures that internal control continues to operate effectively. Internal control systems need to be monitored — a process that assesses the quality of system performance over time. The Federal Managers' Financial Integrity Act and OMB Circular A-123 require an annual statement to be submitted by the head of each executive agency to the President and the Congress on the status of the agency's system of internal control.

System quality assessment is accomplished through ongoing monitoring activities, separate evaluations, or a combination of the two. Ongoing monitoring occurs in the course of operations. It includes regular management and supervisory activities, and other actions personnel take in performing their duties. The scope and frequency of separate evaluations will depend primarily on an assessment of risks and the effectiveness of ongoing monitoring procedures.

Roles and Responsibilities

Internal control is to some degree the responsibility of everyone in an organization. Management is responsible for an entity's internal control structure. Agency heads and other senior political officials are ultimately responsible and must assume "ownership" of the control structure. Chief Financial Officers and other accounting officers are central to the way management exercises control, though all management personnel play important roles and are accountable for controlling their units' activities. All personnel should be responsible for communicating upward in an entity problems in operations and noncompliance with laws and regulations. Offices of the Inspector General and external auditors contribute to the achievement of the entity's objectives and play an important role in assisting management in evaluating the effectiveness of control structures.

Limitations of Internal Control

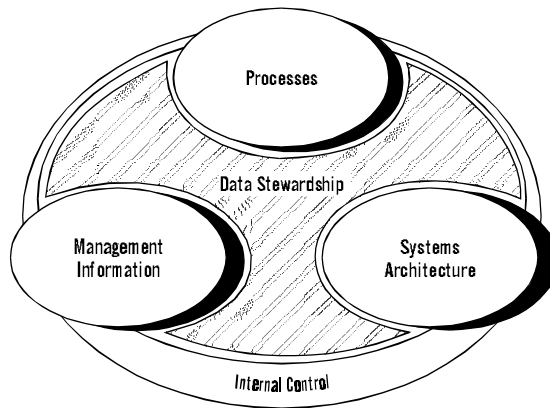
Internal control cannot ensure an entity's success, but can help achieve objectives and provide management information about progress or the lack of progress in specific areas. Good internal control cannot turn an inherently poor manager into a good one, address things beyond management's control, or prevent mistakes in judgment. Internal control must balance the risk assessment of the benefits of controls against their costs in determining the scope and depth of needed controls to ensure the integrity of data used in decision-making and in deterring fraud,

waste, and abuse. Risk management is concerned not only with catastrophic threats, but also with threats that may occur as a result of ineffectively implemented or nonexistent management and operational controls.

Internal control cannot ensure the reliability of financial reporting and compliance with laws and regulations. Internal control over safeguarding of assets from unauthorized acquisition, use, or disposition is not designed to protect against loss of assets arising from inefficiency or from management's operating decisions, such as incurring expenditures for equipment or materials that prove to be unnecessary or unsatisfactory. Internal control can only provide reasonable assurance regarding the achievement of progress toward an entity's objectives, recognizing that (i) controls can be circumvented by collusion or management overrides of the system, and (ii) to the extent losses might occur, effective financial reporting controls exist to properly reflect such information in the financial statements, thereby alerting users to consider the need for action. Reasonable assurance is not absolute assurance. There is no guarantee that, for example, an uncontrollable event, mistake, theft, defalcation, or improper reporting event could never occur.

VIII. Implementing the Integrated Model for Financial Management Systems

**Integrated Model for
Federal Information Systems**



As the capabilities of automated financial management systems expand and become more complex and intertwined with each other, the managements of organizations implementing systems must become more sophisticated in their understanding of how the organization must change. Establishing a new system means much more than developing software—the software must be part of a larger effort to make the organization more effective in carrying out its mission and more efficient in the way limited resources are used to deliver services. To make financial management systems work for the federal government, both central and program agencies must establish and maintain the systems necessary to track financial and related events and provide management information on how the federal government is doing.

This chapter describes important areas for consideration in planning, designing, implementing, operating, and maintaining an integrated financial management system.

Planning

Financial management systems are at the heart of an organization's infrastructure and support the organization's ability to meet its financial obligations. Financial management systems plans must be consistent with top-level management's strategic plans for the organization and must have top-level support and commitment. Strategic information management is a part of management's strategic planning efforts. Typically this involves defining customer segments and needs; establishing critical processes to accomplish agency objectives; understanding the key decisions necessary for program delivery; supporting decisions with the right information available to the right people at the right time; and using technology to collect, process, and disseminate information in ways that improve the delivery of products, goods, and services to customers.

Financial management systems planning involves developing both general and specific directions for the financial management of an organization. To be effective, financial management systems planning must support the overall strategic direction of the organization's financial management activities and be consistent in approach and timing with the plans for information resource management and technology. Financial management systems planning efforts must consider the possibilities and implications of improved communications across organizational boundaries, sharing of information between operating

units and systems, and the ability to streamline processes throughout an organization. Radical changes in financial management operations and responsibilities, such as those brought about by business process reengineering, require concomitant changes in financial management systems to support the new processes.

Standard planning and control approaches, such as life cycle methodologies and screen design standards, should be adopted for design, development, implementation, and operation of financial management systems. These standards should be consistent across all financial applications and be in agreement with the agency's technical architecture and overall system development approach.

The planning process must consider data contained in and processes supported by existing systems. These systems are often outmoded in their functional capabilities and processing capacity, yet are significant to the operation of an organization. Financial management system improvement plans must account for these existing systems in terms of incorporating their processing requirements and replacing them or interfacing their data with newer applications.

Long-range systems planning which defines and prioritizes projects, identifies resources needed (time, staff, technology, skill, funding, etc.), and schedules projects to balance resource requirements and functional needs should result in better utilization of information.

The following steps are the minimum needed for successful planning of financial management systems projects:

1. Develop overall objectives for the organization's financial management activity, consistent with program and policy needs of the agency, and define the supporting systems needed. Make an assessment of existing financial management systems and obtain input from users as to where improvements are needed. Determine how financial management systems are to share data and processing with other information systems and are to be supported by the information technology infrastructure. This step may include comparing (benchmarking) operations against other operations both within and outside the government.

2. Establish clear roles and responsibilities for all the parties necessary to accomplish the overall objectives ensuring that senior executives support desired efforts, project managers are given clear responsibilities, project scopes are understood, and issue resolution processes are in place to resolve conflicts (policy, procedural, resource or organizational).

3. Identify projects that can meet the objectives identified and achieve the target system environment envisioned.

4. Set priorities and select projects from alternatives. This should involve getting direct input from top-level management, decision-makers in the

organization (including the CFO, Chief Information Officer, and program managers) and other stakeholders.

5. Determine needed resources to complete the selected projects. These resources may include in-house staff (program, financial, and IRM personnel), contractors, and hardware support. Significant user commitment and participation is critical for overall project success.

6. Develop a project schedule and budgets, including milestones and deadlines.

Carrying out the plan should involve reporting on progress against the project plan periodically both to senior management and to the project team so that everyone is informed, issues are managed as they arise, and desired outcomes are achieved.

Every agency wants systems that will work together. To achieve this goal, planners and developers must apply architectural design, synthesis, and coordination. They must develop a top-down overview of the processes and the data to be used. The data employed by separately developed systems must be compatible and derived from the same overall data model. The perspectives and views of teams and team members must be coordinated within individual projects, among the various stages of a development path (vertical integration), and among multiple projects occurring in parallel (horizontal integration). Such coordination allows information to be accessible and reusable at many levels and by different systems at different locations.

System Design

Information resource management theory has long advocated systems and information integration. Object-oriented design and development, open systems standards, and client/server architecture are forcing the design of smaller applications that can communicate and cooperate within an overall systems architecture. Instead of trying to build as much logic as possible into large applications, applications are more likely to be broken up into smaller modules. Increasingly, information systems will be conceptualized as communicating cells, each dependent upon, and responsive to the whole but capable of providing independent support for local tasks and operations. This will require compliance with standards set for individual organizations, standards set for the federal government as a whole, standards set to link with external organizations, and standards set by the National Institute of Standards and Technology (NIST) and other applicable standard setting organizations. Federal government, commercial and other approved standards should be followed in establishing the standards for individual financial management systems, as applicable.

To make this approach work, internal interfaces between modules, program, and subsystems must be standardized. Well-defined interfaces allow each module, program, or subsystem to be designed and implemented

independently of the elements with which it communicates. In addition, standardization allows components to be changed without affecting the components which interface with them as long as the interfaces remain stable. It is important to ensure that user interfaces are consistent—that each designer uses the same approach.

Distributed computing, client/server, and cooperative processing are all methods that take advantage of new complex computing capabilities now available to support systems. The foundation for the current client/server and cooperative processing technologies is the concept of separating database, application, and presentation capabilities. The benefits of such separations are optimization of computing resources and improved speed and responsiveness to user information requests.

Distributed architectures spread the processing workloads and information storage tasks across a variety of processors and storage devices, helping to eliminate bottlenecks in the system that might hinder throughput. Distributing the presentation capabilities of a system allows the user interface to be tailored to individual users' needs and preferences. Distribution of processes and data may be accomplished through replication, partitioning, or a combination of the two. Replication involves placing copies of the same processes and/or data in multiple locations to bring them closer to end users and to share computer resource workloads. Partitioning involves splitting processes and/or data to take advantage of different processor capabilities and meet the different requirements for timing execution and numbers of users requiring access to updated information.

Distributing transaction processing out to the people who are involved in generating or recognizing financial events as they occur can greatly increase accuracy and efficiency. Transaction edits are usually more valuable when they are performed close to the points of entry, where research and corrections can be more easily made. When transactions are entered into the financial management system, all components of the data classification structure must be validated at the points of entry. Using common tables for account codes, program codes, vendor codes, and other codes, which are accessed by all applications of the integrated financial management system and related systems, will help avoid differences in transaction coding.

The move from large, monolithic centralized systems to systems made up of many small components spread across a network has made the tasks of managing telecommunications, maintaining version control over software and hardware, ensuring data integrity and consistency throughout the system, and providing effective user training and documentation much more complicated than they were before. As computer technology becomes more accessible and available, more and more people want to use it. Diverse hardware and software to meet a variety of needs must be integrated using networks with standardized interfaces to form seamless, integrated solutions. Consideration should be given to information accessibility and computer accommodation for the disabled. Such consideration should focus on minimizing the functional

limitations of employees in order to promote productivity and to ensure access to work-related information resources.

Development Approaches

Regardless of the size of the system, the process of developing and enhancing systems is critical to the success of the organization. Any development approach used must support the overall vision for the target financial management systems environment and be consistent with applicable standards. Major system changes, despite the risk and time involved, may be necessary to support major changes in processes or organizational structures due to reengineering. On the other hand, an incremental development approach provides benefits to system customers relatively quickly while moving toward longer term objectives. New system capabilities can be tested on a pilot basis to assure workability and acceptance before committing too many of an organization's resources to an inadequate or inappropriate solution. An incremental approach also helps to alleviate the problems of "change overload" on system users.

The development of new financial system applications often requires or allows for changes in processes, procedures, and organizational structures. New systems should not be developed to merely automate an inefficient process. The use of business process reengineering (BPR) is an effective way to identify and accomplish needed changes that may be significant in nature. The process of changing from old ways to new ways is difficult. For that reason, much attention needs to be given to managing change when financial systems development projects are undertaken.

Alternative strategies for development approaches might include upgrading or refurbishing existing systems, implementing off-the-shelf packaged software with or without modifications, entering into a cross-servicing or support arrangement with another federal organization, contracting out system functions, custom-developing a new system, or other possibilities identified during the planning process. An analysis of alternatives based on objective criteria and identifying pros and cons of alternatives should be prepared. Costs, benefits, and risks associated with all feasible alternatives should be compared and the most advantageous approach to use determined. Examples of criteria for assessing alternative development strategies are:

- Percentage fit of alternative with desired system model (with and without modifications)
 - Level and type of project risk
 - Flexibility for future growth (functional and technical)
 - Impact on employees and offices
 - Consistency with current and projected technology standards
-

- Duplicate system reduction
- Solution complexity
- Costs and use of resources

For financial management functions such as general ledger, payment processing, payroll, travel, and procurement, the requirements are sufficiently common that an agency should be able to find a solution that will meet the majority of its needs without substantial modification, using either commercial off-the-shelf application software packages or a cross-servicing or other support arrangement with another organization. Custom development of system applications should be used as a last resort and only after consideration of all appropriate software options. Examples are agency systems to support unique program functions. If custom development is required, agencies should consider using Computer-Aided Software Engineering (CASE) tools to improve control over the design and development process, and/or Rapid Application Development techniques such as prototyping to improve user acceptance. A standard development methodology, augmented by CASE tools or prototyping as appropriate, should be used to ensure consistency of approach and compatibility with existing and planned systems.

Security

Computer systems, databases, and communication networks are key components of the information technology infrastructure upon which financial management systems depend. Computer security is an important element of internal control; it is essential for the operations of systems and the accuracy of the financial data collected, stored, and reported.

System security must be established and maintained following the computer security policies set forth in Appendix III to OMB Circular A-130, "Security of Federal Automated Information Systems." Computer security must include assignment of responsibility for security, environment security plans, review of security controls, training, personnel screening, and incident response capability.

Training

Quality training is key to successful implementation and ongoing operation of a financial management system. Without proper training, end users of a system may erroneously enter data or provide information that is not properly understood by management. The user training program must be flexible enough to meet various levels of user needs (such as senior management, mid-management, and financial personnel), based on their roles and responsibilities within the organization.

A comprehensive training program should address three groups of individuals: (i) systems personnel (computer specialists and analysts), (ii) operations personnel (computer operators), and (iii) users (financial management and program personnel).

- Systems training should address the technical environment (hardware and software) used to develop the financial management system, as well as the policies and procedures for maintaining the system (“fixes” and enhancements).
- Operations training should address the actual operation of the computer(s) supporting the financial management system, with specific attention directed toward how to operate the computer and what to do if certain problem situations, such as power or system failures, occur.
- User training should address the users entering the data (input) and the users who are using the data presented in management reports (output) for decision-making.

Since training requires a considerable investment of resources, a recommended approach is to train selected individuals to serve as a core cadre of trainers, and then have the core trainers train others in their organizational units. This approach can optimize the use of resources and provide a broader ongoing support network. To ensure a successful training program, the trainers must possess a thorough working knowledge of the system (hardware, software, required inputs, and outputs) and the policies and procedures in place related to the system. Training can be further enhanced by trainer understanding of not only the financial management system, but also the general operation of computers (mainframe and personal computers). The trainers need to be skilled communicators, capable of keeping the audience attentive, while clearly providing the necessary level of instruction. The trainers also need to recognize what levels of detail are appropriate depending on the skills of their students.

In developing and implementing training programs, consideration should be given to the use of electronic media and other uses of technology to facilitate training for individuals in the more effective and efficient manner.

The final key to a successful training program is feedback. Carefully developed evaluations which allow the students to clearly identify strengths and deficiencies in the training program, including the effectiveness of the trainer, should be used and reviewed on a regular basis. The training program and trainers should be flexible enough to adapt to constructive criticisms.

Documentation

Documentation, like training, must be geared to the levels of the end users and their roles and responsibilities within an organization. Documentation must be user friendly, kept up-to-date, and include all of the information needed to operate the software effectively within the agency environment.

Documentation should be developed to assist all users of the system, from computer specialists to financial management and program personnel. It should be “user friendly” so as to provide a useful tool, rather than simply a book which sits on a shelf. Quality documentation, which is kept up-to-date, will be used on a regular basis, and will be critical in supporting the ongoing operation of a financial management system.

As a minimum, the following types of financial management systems documentation are needed:

- Systems Documentation
- Operations Documentation
- User Documentation

Illustration VIII-1 summarizes the types of documentation and the information required in each case.

**Illustration VIII-1
Documentation**

Type of Documentation	User	Description	Possible Content
Systems Documentation	Primarily intended for computer specialists and analysts	Covers the data processing or automated aspects of the system, such as application program coding and descriptions of how the system operates. Systems documentation describes and is used to control the software and hardware and the physical processing of the data and operation of the equipment. Systems documentation should include all of the information that would be necessary for a systems analyst and/or programmer not familiar with the system to learn and maintain the program in an efficient and timely manner.	<ul style="list-style-type: none"> ■ Overall system flow charts (including manual and automated processes, location of data, and security provisions) ■ A list of system programs (specifications, functional descriptions, run frequencies, and error and halt conditions) ■ Data dictionary ■ A list of transaction and master file/record definitions, including field size, class (alpha vs. numeric), type (computational vs. display), relative record position, range or values, and dependent fields ■ Descriptions of the major inputs, including screen formats, describing layouts, edits, and correction procedures ■ Data elements ■ Validation criteria ■ Descriptions of the major outputs, including report definitions with layouts of the contents and descriptions of the controls (distributions, frequencies, and breaks)
Operations Documentation	Operators of the computer system	Provides the operating instructions for the system. Operator documentation should include all of the information that would be necessary for a systems operator to operate the system in an efficient manner.	<ul style="list-style-type: none"> ■ Installation instructions (initial loading and update) ■ Operating instructions (start-up, back-up, and recovery procedures) ■ Emergency priorities ■ Security procedures (access controls, data encryption, procedures for changing passwords, etc.) ■ Peripheral device requirements ■ System messages and troubleshooting guides ■ Schedules and names of batch jobs, including projected run times and procedures for ensuring that batch jobs are completed.
User Documentation	Financial management and program personnel	Describes the total system as a functional entity and includes the policies, processes (manual and automated), and procedures. A general system overview (integrated text and graphics) should describe how each application integrates with other applications, and the overall operational process. [User documentation should be specifically developed to assist all levels of users and should provide short, easy-to-use common problem fixes, detailed operating instructions, and reference materials related to the system.]	<ul style="list-style-type: none"> ■ The operational and systemic flow ■ Account structure and definitions ■ Transaction codes and their effects on the general ledger tables ■ Transaction processing cycles and data flows ■ Data dictionary ■ Inputs: <ul style="list-style-type: none"> ■ samples and descriptions of all source documents ■ replications and descriptions of all screens ■ description of input/access controls ■ descriptions of required vs. optional data elements ■ descriptions of all system error messages and suggested user actions ■ Outputs: <ul style="list-style-type: none"> ■ quick reference guides for the end user ■ samples and descriptions of all standard reports available from the system ■ detailed guidance on end user ad hoc queries and reporting ■ report reconciliation techniques

Application Testing

Testing the deliverables of a financial system project is critical to assure the integrity of the system. The testing process involves not only the software, but also training materials, documentation, changes to edit tables, inter- and intra-system module interfaces, screens, reports, operating procedures, and equipment. Each application will have its own set of testing needs. The project leader must ensure that testing is performed and that the most appropriate testing program is applied to the situation.

Testing of a system should occur at various stages of the implementation process and must be adequate to ensure that the systems will meet agreed-to user needs. Such testing must verify:

- Software Functional Capabilities
 - screens and reports are working
 - software executes as required
 - documentation and training materials reflect the software capabilities
- User Acceptance
 - software functions meet user requirements
 - automated processes support desired work processes
- System Acceptance
 - system works with expected volumes
 - system interfaces work properly
 - automated conversion processes convert data properly
 - software works in the production environment

Since quality testing and review are critical to financial systems implementation success, appropriate approval criteria must be established for each type of testing. Further, appropriate precautions must be taken to ensure that test and production environments are separated. Test data must not be allowed to corrupt production system data.

Transitioning to a New System

Transitioning is the last step in implementing a new financial management system. Transitioning requires (i) change management to assist in organizational adjustments necessary to take proper advantage of a new system; (ii) installation of new software and procedures to support the new way work will be performed; and (iii) elimination of the old systems, including software, procedures, and policies. All three elements are required for a successful transition.

Change management involves balancing opportunities and risks in order to realize fully the benefits of implementing a new financial management system. Opportunities exist to streamline processes, produce more meaningful and accurate information, and automate tasks, thereby allowing better analysis and decision-making and improving service delivery. Minimizing the risks inherent in implementing a new system is desirable, but an organization that views minimizing risk to be “maintaining the status quo” will resist a new system, even though the risk of being unable to provide acceptable levels of service is very high. Taking a narrow view of risk minimizes the benefits of a project and may doom a system implementation effort to failure. To overcome this tendency, the organization’s management must recognize that risks need to be assumed if benefits are to be achieved and must be aware of the risk of continuing with the “status quo.”

Implementation requires preparation of managers, employees, and others for use of the new system. Preparation of physical sites may be required. Data must be converted from old systems and, in some cases, created. The opinions of all participants in the process should be sought before finalizing a new system. Similarly, their input should be sought on the implementation. Once a system is implemented, training and documentation updates must be continued throughout the life of the system.

There are three primary techniques for transitioning to a new system:

- Incremental implementation beginning with a pilot(s) and phasing in operations by organization or function. This approach reduces the amount of simultaneous change in the organization, but increases the complexity of data consolidation and maintaining integrity of the process during the phase-in period.
- Hard cut-over in which all operations of the old system cease and the new system starts all at once. This eliminates users’ abilities to cling to the old system and problems associated with running multiple systems. However, since full system testing and adequate training are critical; it is more difficult to recover from errors or flaws in system design and implementation processes using this technique.
- Running the new and existing systems in parallel. This method allows operations to continue using the old system while errors are corrected in the new system. However, this technique requires a significant amount of resources that may not be available. Furthermore, changes in work processes and data requirements may make it impossible to compare results.

The choice of transitioning method should consider the benefits and risks of each method, resources available for implementation, and impact on the organization affected by the change. Regardless of the method used, adequate testing must precede transitioning to ensure a smooth transition.

Elimination of replaced systems is also a critical element in transitioning to a new system. Systems that remain in operation long after a new system is in place to perform replaced functions absorb resources, cause problems with interfaces, and make it more difficult to integrate functions. Benefits from replacing an old system cannot be fully realized until the organization is using fully the capabilities of the new system and processes and has discontinued the operation of the old system. Any delay in eliminating an old system uses resources that might otherwise be available for program delivery.

Operations Support

After a financial management system is implemented, a new phase begins. This phase is as critical as the actual implementation. A team of trained computer and financial systems analysts, involved in the development of the system, should provide post-implementation support. This post-implementation team, separated from the help desk role, should also assess the implementation of the system and make improvement recommendations to project managers. Individuals from the financial systems project team might be used to form the core of the post-implementation team. They have knowledge of and familiarity with the user organizations and operations. This will assist in the early stages of the implementation as the user organization transitions from the old system to the new system.

Users who apply the training and use the system will have questions and improvement suggestions on the operation of the system and its software. The post-implementation team should be in place to consider and provide feedback to the system developers and analysts on adjustments suggested by the users. The questions and comments should be given careful consideration in assessing changes to the system. All parties associated with the maintenance and operations of financial management systems should ensure that design concepts are sustained throughout the life cycle of systems and that the systems operate to meet the changing needs of the users.

Support personnel are needed to maintain user documentation, adjust security privileges, reconcile interfacing system feeds, maintain systems tables, conduct ongoing user training in system operations, assist in the testing of changes to the system, and enable year-end and special operations activities. The individuals responsible for monitoring and managing the production and operations of the financial systems must ensure that any problems with the system are fully understood and that control breeches are corrected promptly.

The initial standardized reports following implementation of the system are often not sufficient to meet management needs. Customized reports are often needed and interfaces with, or bridges to, existing administrative systems may need to be assessed and enhanced after the system is operational.

Change Control

Financial systems must be constantly reviewed to determine adjustments necessary to meet the needs of the organizational and functional environments. Change requests must be adequately coordinated and analyzed to ensure consistency with agency policy, user requirements, and implementation schedules. The approval process must reflect appropriate agency priorities.

Too many changes made at the same time may incur taking unnecessary risk. The change control process must include a mechanism for setting priorities. A critical success factor in the management of a system is the ability to track and control these changes. The objective of change control is to establish a scheme to provide orderly and controlled modifications to the functions and operations of the system. Changes may vary in size and system impact and may affect not only software but also related components, such as training, documentation, test cases, equipment, interfaces, and reports. The management must ensure that changes are made in an orderly manner and that modification schedules are met.

Change control requires an understanding of the reasons for changes, the scope of changes, and the impacts of changes on various systems. Change control procedures should clearly define, for all parties, the nature of the changes required and ensure adequate documentation of the specific changes and problems, appropriate approvals, and timely resolution of change requests. Changes to the operating system, database software, telecommunication services, hardware platforms, and applications software should be coordinated with the financial systems manager.

Version Control

Maintaining version control over a system requires a structured methodology for managing the configuration of software, hardware, data, telecommunications, and procedures. Version control is important for all systems, but particularly so for systems operating in a distributed environment.

“Common version control over software” as used in OMB Circular A-127 requires a responsible organization to track, control, and coordinate software versions used by multiple organizations. The implementation of changes may be phased in over time for different installations, but the consequences of having different versions in operation must be recognized and managed.

Under version control, changes to software are identified and grouped into identifiable software releases and sub-releases. This assists users in identifying the functionality provided by a system in a given installation and in determining compatibility between different installations.

Version control should also coordinate changes to other components of the system. For example, if a new release of software requires more powerful hardware or telecommunications capabilities, these new requirements must be communicated to the appropriate people so that the new capabilities may be installed either before or in conjunction with implementation of the new software. Conversely, new hardware or procedural changes may affect the software.

Glossary

Analysis of Alternatives

Examining a set of feasible options to determine the advantages and disadvantages of each. Part of analyzing all of the alternatives includes a cost/benefit analysis of each alternative.

Application Controls

Specific controls to provide reasonable assurance that the recording, processing, and reporting of data is properly performed within the framework of financial management systems.

Budget Formulation

The annual cycle wherein budget estimates are developed (formulated) beginning each spring within every agency, submitted to the Office of Management and Budget (OMB) for review, transmitted by the President to the Congress, and tracked through the Congressional appropriations process.

Business Process Reengineering

The radical redesign of key processes as well as the human and technical environment to achieve improved results in profitability and customer satisfaction.

Change Control

A scheme to provide orderly and controlled modifications to the functions and operations of the system.

Chart of Accounts

The list of general ledger account numbers that subdivide basic accounting equations, with associated titles and definitions, used by an entity for posting to its general ledger.

Chief Financial Officers Council

The Chief Financial Officers and Deputy Chief Financial Officers of the agencies covered by the Chief Financial Officers Act and representatives from OMB and Treasury.

Classification Structure

The data elements defined to support a specific portion of an information architecture. The classification structures identified in this document are the transaction classification structure, financial information classification structure, operations information classification structure, and program information classification structure.

Control Activities

The policies and procedures which help ensure that management's directives are carried out, and that actions are taken to address risks to achievement of the entity's objectives. Control activities occur throughout the organization, at all levels and in all functions. They include approvals, authorizations, verifications, reconciliations, reviews of operation performance, security of assets, and segregation of duties.

Control Environment

The foundation for all other components of internal control, providing discipline and structure. Control environment factors include the integrity, ethical values, and competence of the entity's people; management's philosophy and operating style; the way management assigns authority and responsibility and organizes and develops its people; and the attention and direction provided by top management. The environment sets the tone for the organization, influencing the control consciousness of its people.

Glossary

Cooperative Processing

The coordinated use of multiple modules or programs, working together to share information and processing.

Data Dictionary

Listing of information about data elements. Data dictionaries commonly describe the contents of data elements, provide the names used by functional users of the system to refer to elements, as well as the name or representation used within the programming and tables of the system, and other descriptive information. The other descriptive information may include the logic used to obtain that element; the size of the element; formatted reports that use the element; and the source, type, and potential users of the element.

Data Stewardship

The process of managing information necessary to support program and financial managers and assuring data captured and reported is accurate, accessible, timely, and usable for decision-making and activity monitoring.

Distributed Computing (Distributed Processing)

Processing in which some or all of the processing, storage, and control functions, in addition to input/output functions, are dispersed among data processing stations. One special configuration of distributed processing is client/server processing in which the application is split among two or more machines.

Event Level Architecture

The portion of an information architecture that supports the capture and recording of transaction data on individual financial events. It includes the data element structures and definitions, the valid values, and the mapping of financial events to system transactions.

FASAB

The Federal Accounting Standards Advisory Board, established to recommend federal accounting principles and standards to the Director of OMB, Secretary of the Treasury, and the Comptroller General.

Federal Assistance

Those functions providing monetary support to state governments, local governments, private organizations, or individuals, including the functions of transfer payments, grants and subsidies, loans, and insurance.

Financial Accountability

An accounting for the resources of an entity needed for legal accountability for budgetary resources, stewardship over assets, protection of cash resources, and management and control of costs. Financial accountability includes the functions of budget execution, financial accounting, cash management, and cost management.

Financial Data Integrity Control

The structural discipline over data used in the financial accountability functions of budget execution, financial accounting, cash management, and cost accounting that is designed into financial management systems to ensure consistency with data used in the transaction tracking functions. Financial data integrity control provides the structural framework to ensure financial accountability functions within an agency are maintained consistently throughout the financial management systems.

Glossary

Financial Event

Any occurrence having financial consequences to the federal government related to the receipt of appropriations or other financial resources; acquisition of goods or services; payments or collections; recognition of guarantees, benefits to be provided, or other potential liabilities; or other reportable financial activities.

Financial Management Systems

The financial systems and the financial portions of mixed systems necessary to support financial management.

Financial Management Systems Architecture

The blueprint for the logical combination of financial and mixed systems to provide governmentwide and agency budgetary/financial management support for program and financial managers.

Financial System

An information system, comprised of one or more applications, that is used for collecting, processing, maintaining, transmitting, and reporting data about financial events; supporting financial planning or budgeting activities; accumulating and reporting cost information; or supporting the preparation of financial statements.

Financing

Those functions necessary to provide the financial resources to fund government operations and federal assistance including the functions of taxation, fee and revenue generation, public debt, deposit funds, and intragovernmental collections.

General Controls

The structure, methods, and procedures that provide the overall control environment affecting the financial management systems.

Government Operations

Those functions necessary to run the basic operational activities of the government and to provide services, such as law enforcement and national defense, which are non-monetary in nature. Government operations include the functions of personnel, acquisition, property management, and inventory management.

Governmentwide Financial Management System

A system which contains information on the federal government as a whole or which handles particular financial management services for multiple agencies by a single, designated service provider. These systems support governmentwide decision-making, centralized processing, and consolidated information requirements.

Information and Communication

The process of identifying, capturing, and communicating pertinent information in a form and time frame that enables people to carry out their responsibilities.

Information Architecture

The structure and uses of information maintained in and reported by an information system.

Information System

The organized collection, processing, transmission, and dissemination of information in accordance with defined procedures, whether automated or manual.

Glossary

Integration

The use of common processes and standardized data to effectively and efficiently manage and report on the use of financial resources and to track the financial implications of activities of the federal government.

Internal Control

A process, effected by the management and other personnel of an entity, designed to provide reasonable assurance regarding the achievement of objectives in the following categories: (i) effectiveness and efficiency of operations and programs, (ii) reliability of information and financial reporting, and (iii) compliance with applicable laws and regulations.

JFMIP

Joint Financial Management Improvement Program, a joint and cooperative undertaking of OMB, GAO, the Department of the Treasury, and OPM, working in cooperation with each other and with operating agencies to improve financial management.

Management Cycle

The process by which the federal government chooses, implements, and monitors the activities that are carried out to meet the goals and objectives of its citizenry.

Mixed System

An information system that supports both financial and non-financial functions of the federal government or components thereof.

Monitoring

The process of assessing the quality of the internal control system over time. This is accomplished by ongoing monitoring in the course of operations and/or separate evaluations based on an assessment of risks and the effectiveness of the ongoing monitoring.

National Performance Review

A review of the federal government led by Vice President Al Gore which resulted in improvement recommendations. The report, *Creating a Government that Works Better & Costs Less*, was issued September 7, 1993.

Non-financial System

An information system that supports non-financial functions of the federal government or components thereof and any financial data included in the system are insignificant to agency financial management and/or not required for the preparation of financial statements.

Object-oriented Design

Designing a system, module, or program which uses data objects rather than applications or data files to perform tasks.

Program Execution

The processes necessary to carry out program objectives and provide information to monitor and manage program execution activities.

Reporting Level Architecture

The portion of an information architecture that provides the structure and presentation requirements for information needed to meet decision-making, management, and internal and external reporting needs.

Glossary

Risk Assessment

The identification and analysis of relevant external and internal risks to achievement of established objectives, forming a basis for determining how risks should be managed.

Shared System

A governmentwide system used by agencies where they have must have information/data definitions common to all users to effectively and efficiently support particular functions.

Single, Integrated Financial Management System

A unified set of financial systems and the financial portions of mixed systems encompassing the software, hardware, personnel, processes (manual and automated), procedures, controls, and data necessary to carry out financial management functions, manage financial operations of the agency, and report on the agency's financial status to central agencies, Congress, and the public. Unified means that the systems are planned for and managed together, operated in an integrated fashion, and linked together electronically in an efficient and effective manner to provide agencywide financial system support necessary to carry out the agency's mission and support the agency's financial management needs.

Transaction Tracking

Captures data to identify, record, and report transactions arising from individual financial events. Transaction tracking includes the functions of receivables/collections, payables/disbursements, payroll, travel, property accounting, and inventory accounting.

U.S. Government Standard General Ledger

A uniform chart of accounts and pro forma transactions used to standardize federal agency accounting and to support the preparation of standard external reports required by central agencies. OMB and Treasury Financial Management Service regulations require agencies to use the SGL to accumulate and report standard financial data. The SGL chart of accounts identifies and defines budgetary, proprietary, and memorandum accounts to be used in agencies' accounting systems. The SGL is generic for the federal government and is not intended to reflect any single federal agency's accounting system.

Version Control

A method by which a responsible organization tracks, controls, and coordinates software versions used by multiple organizations.